HCD-VF1

SERVICE MANUAL

AEP Model
E Model

This set is the tuner CD player section in LBT-VF3

Model Name Using Similar Mechanism	HCD-H70
CD Mechanism Type	CDM13B-5BD3
Optical Pick-Up Block Type	BU-5BD3

SPECIFICATIONS

Tuner section	
System	FM stereo FM/AM superheterodyne tuner
FM tuner section	
Tuning range	87.5 to 108 MHz
Antenna	75 ohms unbalanced
Intermediate frequency	10.7 MHz
AM tuner section	
Tuning range	531 to 1,602 kHz (at 9 kHz interval) 530 to 1,710 kHz (at 10 kHz interval)
Antenna	AM loop antenna External antenna terminal
Intermediate frequency	450 kHz
CD player section	
Frequency response	2 Hz to 20 kHz ±1 dB
Signal-to-noise ratio	More than 110 dB
Dynamic range	More than 100 dB
Harmonic distortion	Less than 0.008%
Channel separation	More than 95 dB
DIGITAL OUTPUT (OPTICAL) (Optical output connector)	Wave length 660 nm output level −18 dBm
General	
Power requirements	220-230 V AC, 50/60 Hz (South-east Asian AEP, German model) 120 V AC, 50/60 Hz (Latin American model)
Power consumption	14 W
AC outlet	2 switched, total 180 W max.
Weight	Approx. 4.1 kg
Dimensions	Approx. 355 × 79.5 × 296 mm (w/h/d, including projections)

Design and specifications are subject to change without notice.

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

MICROFILM

TUNER CD PLAYER

SONY®

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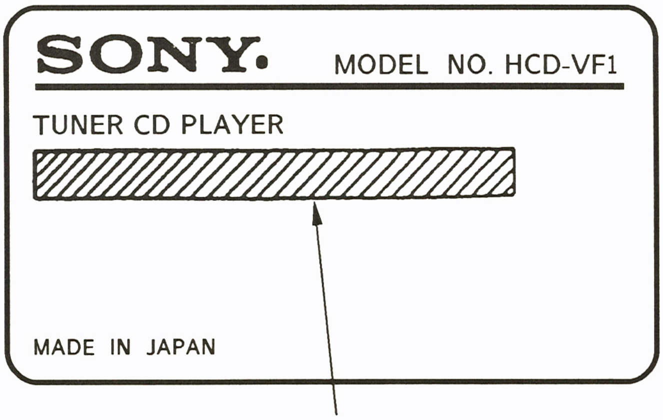
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MODEL IDENTIFICATION

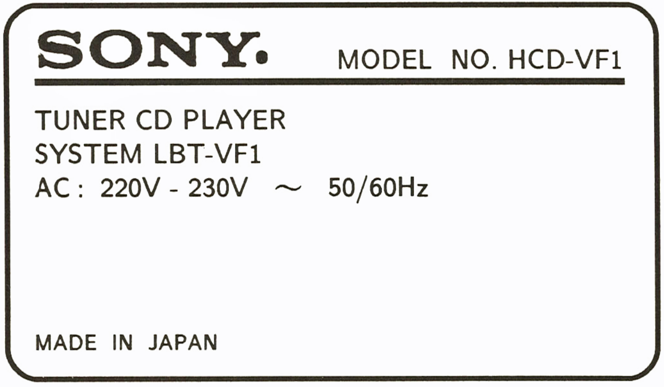
- Specification Labels -

AEP, E MODEL



AEP Model : AC 220 - 230V ~ 50/60Hz
E(120V) Model : AC 120V ~ 14W 50/60Hz
E(220 - 230V) Model : AC 220V - 230V ~ 14W 50/60Hz

Germany MODEL



NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe more than 30cm away from the objective lens.

SECTION 1
GENERAL

This section is extracted from instruction manual.

1-1. LOCATION OF CONTROLS

Location of Controls

CD player section

When you press the ►II button, HCD-VF1 works as a CD player.

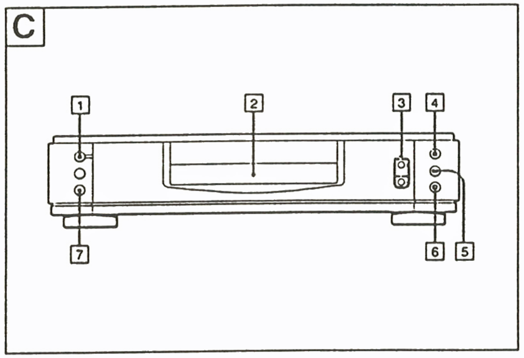
With the door closed (Fig. C)

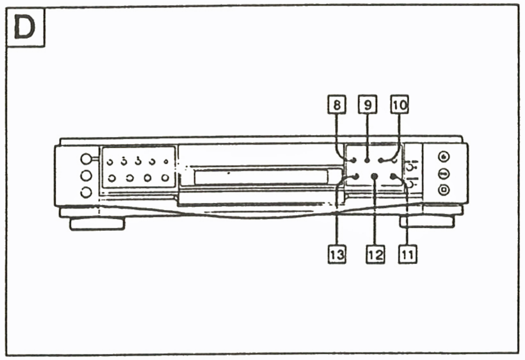
1 OPEN button
2 Display
3 ◄◄ I◄◄ (AMS*/manual search) and ►► ►►I (AMS*(RMS**: in shuffle mode)/manual search) buttons (70, 72, 74, 78)
4 ≜ (Open/Close) button (66)
5 ►II (Play/Pause) button (66)
6 ■ (Stop) button (66)
7 SYSTEM POWER button (18, 62)

With the door opened (Fig. D)

8 CHECK button (80)
9 CLEAR button (80)
10 TIME button (68)
11 PROGRAM button (78)
12 SHUFFLE button (74)
13 CONTINUE button (74, 78)

* AMS is the abbreviation of Automatic Music Sensor.
** RMS is the abbreviation of Random Music Sensor.
(RMS functions only in shuffle mode.)





Location of Controls

Refer to the pages indicated in parenthesis for details.

Tuner CD Player (HCD-VF1)

Tuner section

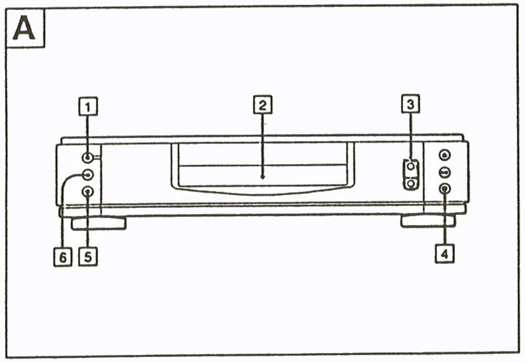
When you press the BAND button, HCD-VF1 works as a tuner.

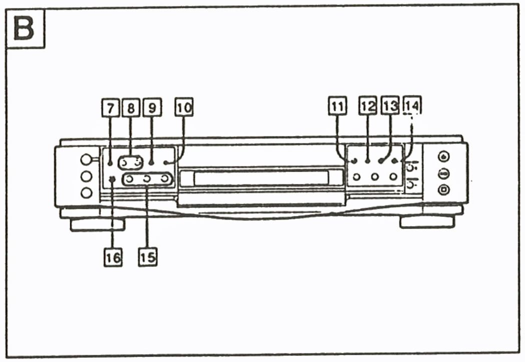
With the door closed (Fig. A)

1 OPEN button
2 Display
3 + and – buttons (24, 26, 28, 30)
4 TUNING/PRESET button (24, 28)
5 SYSTEM POWER button (18, 62)
6 BAND button (24)

With the door opened (Fig. B)

7 CONTROL/CHECK/CLEAR button (62, 64)
8 –/+ buttons (56, 60, 62)
9 NEXT button (56, 62)
10 CLOCK button (56)
11 MEMORY button (26)
12 CHARACTER button (30)
13 SHIFT button (26, 28)
14 STEREO/MONO button (24), ENTER button (26)
This button works as the ENTER button in memory mode. In other modes, it works as the STEREO/MONO button.
15 Numeric buttons for the timer setting (60, 62, 64)
16 SLEEP button (58)





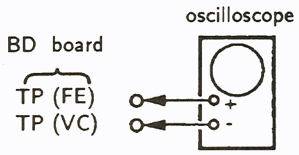
SECTION 2
ELECTRICAL ADJUSTMENTS

CD SECTION

Note :

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

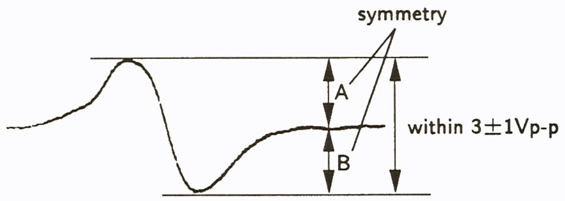
S-Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
4. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3±1Vp-p.

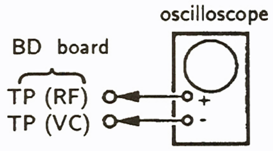
S-curve waveform



5. After check, remove the lead wire connected in step 2.

Note : · Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
· Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check



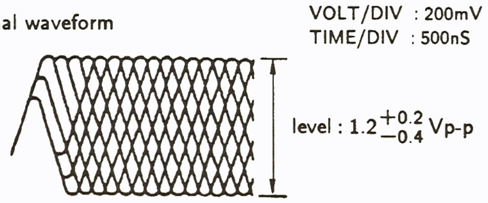
Procedure :

1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

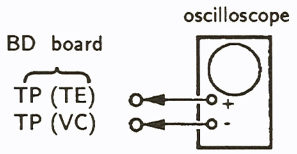
Note :

Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform



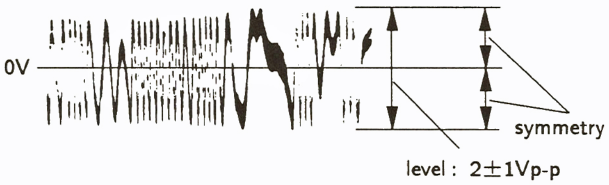
E-F Balance Check



Procedure :

1. Connect test point TP (ADJ) to ground and TP (TEI) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

Traverse oscilloscope

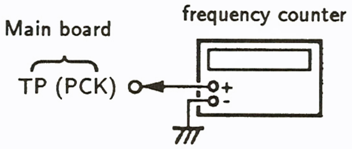


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCK) with lead wire.


Main board
frequency counter
TP (PCK)
+
-

2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4.3218 MHz.

Focus/Tracking Gain

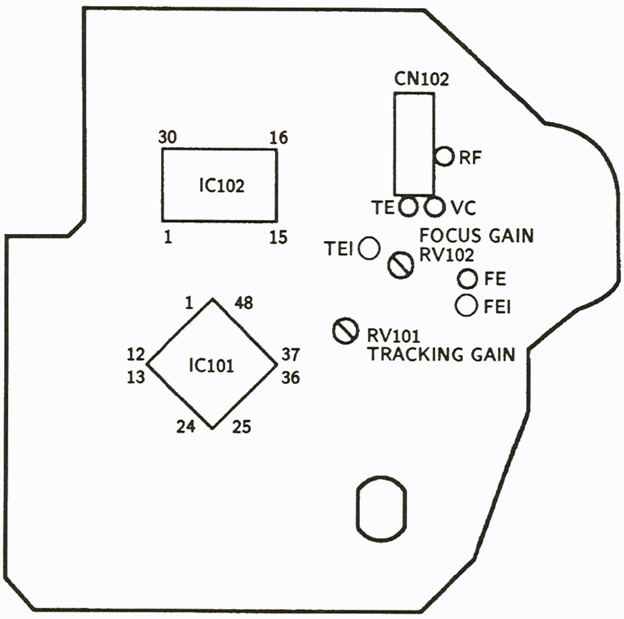
This gain has a margin, so even if it is slightly off. There is no problem.

Therefore, do not perform, this adjustment.

Please note that it should be fixed to mechanical center position when you moved and do not know original position.

【BD BOARD】

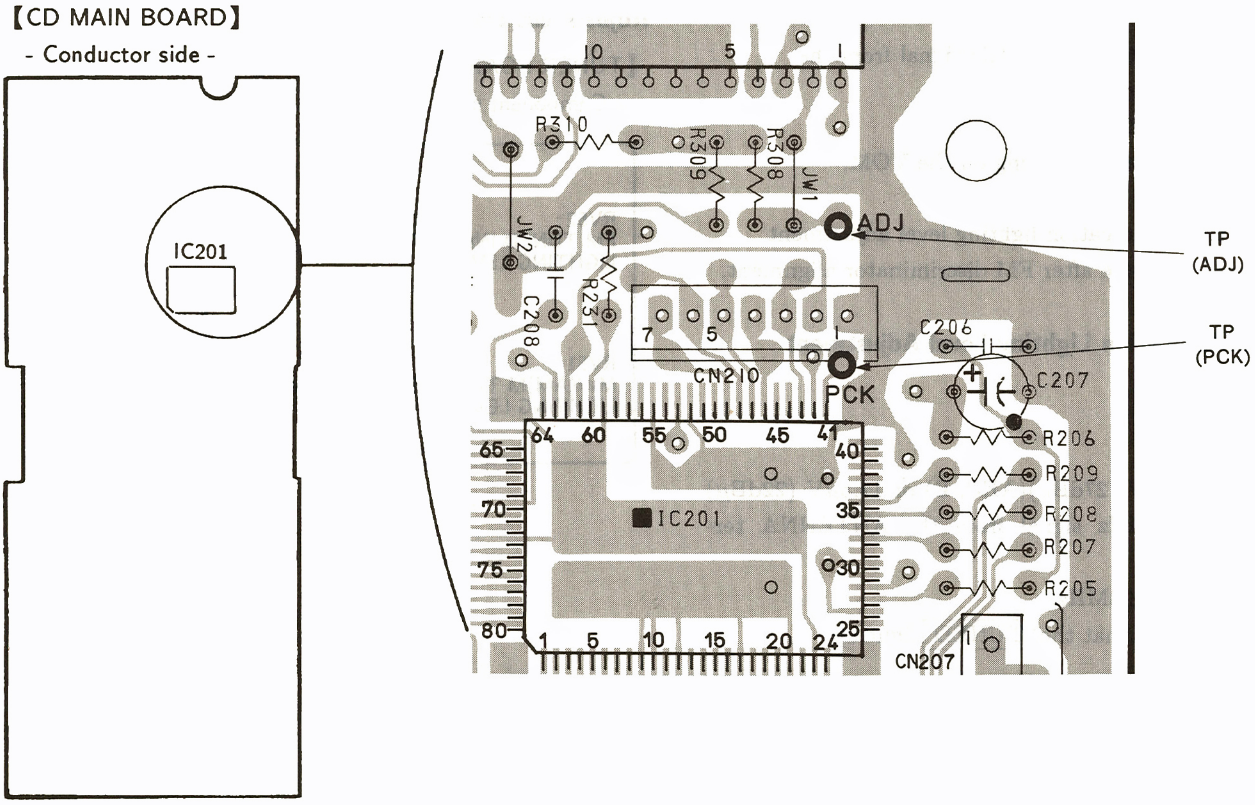
- Conductor side -


CN102
RF
TE
VC
FOCUS GAIN
RV102
TEI
FE
FEI
RV101
TRACKING GAIN
IC102
30
16
1
15
IC101
1
48
12
13
37
36
24
25

Adjustment Location :

【CD MAIN BOARD】

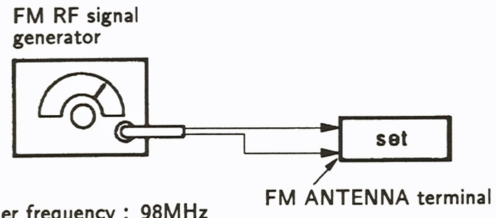
- Conductor side -


IC201
10
5
1
R310
R309
R308
JW1
JW2
ADJ
TP
(ADJ)
C208
R231
7
5
1
CN210
PCK
TP
(PCK)
C206
C207
R206
R209
R208
R207
R205
CN207
64
60
55
50
45
41
40
35
30
25
65
70
75
80
1
5
10
15
20
24
IC201

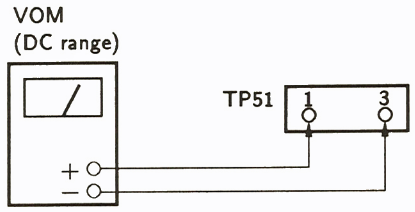
TUNER SECTION

FM SECTION ADJUSTMENTS

Setting :


FM RF signal generator
set
FM ANTENNA terminal

Carrier frequency : 98MHz
Modulation : 1kHz, 40kHz deviation


VOM
(DC range)
TP51
1
3
+
−

FM Discriminator Alignment (NULL Check)

Band : FM

Procedere :

1. Supply a 1mV (60dBμ) 98MHz signal from the ANTENNA terminal.
2. Tune the set to 98MHz.
3. Adjust IFT51 for 0V reading on the VOM.

Note : FM tuned indication lighting level adjustment should be made after FM discriminator alignment.

FM Tuned Indication Lighting Level Adjustment

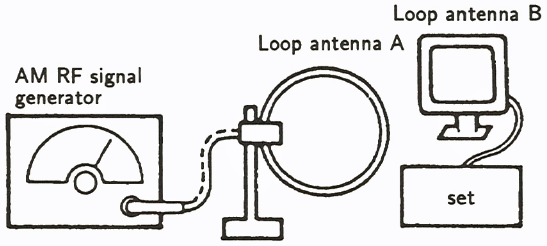
Band : FM

Procedure :

1. Supply a 22.5μV (27dBμ)(AEP, E) or 12.5μV (22dBμ) (Germany) 98MHz signal from the ANTENNA terminal.
2. Tune the set to 98MHz.
3. Adjust RV52 so that the TUNED light up.

AM SECTION ADJUSTMENTS

Setting :


Loop antenna B
Loop antenna A
AM RF signal generator
set

30% amplitude
modulation by 400Hz signal

MW(AM) Tuned Indication Lighting Level Adjustment

Band : MW or AM

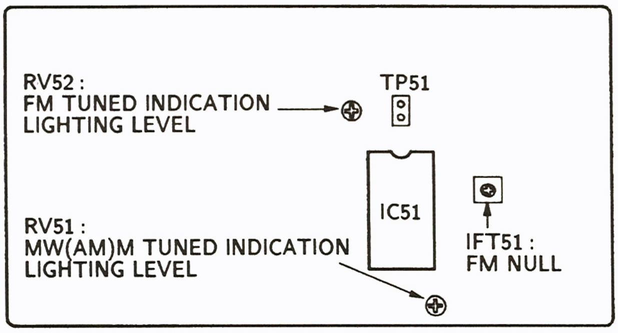
Procedure :

1. Set loop antenna A so that the loop antenna B input level becomes 0.25mV(48dBμ).
2. Tune the set to 1,404kHz.
3. Adjust the RV51 so that the TUNED light up.

Adjustment Location :

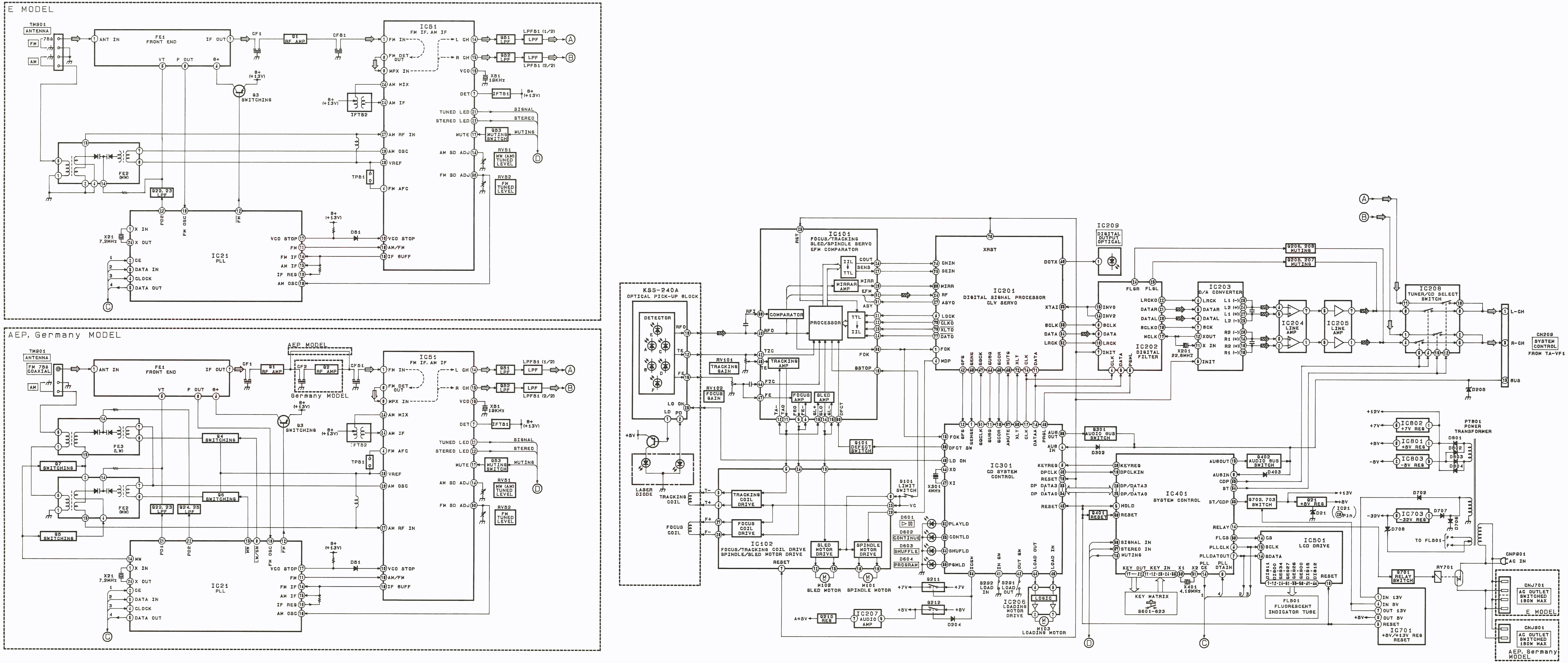
【TUNER BOARD】

- Component side -

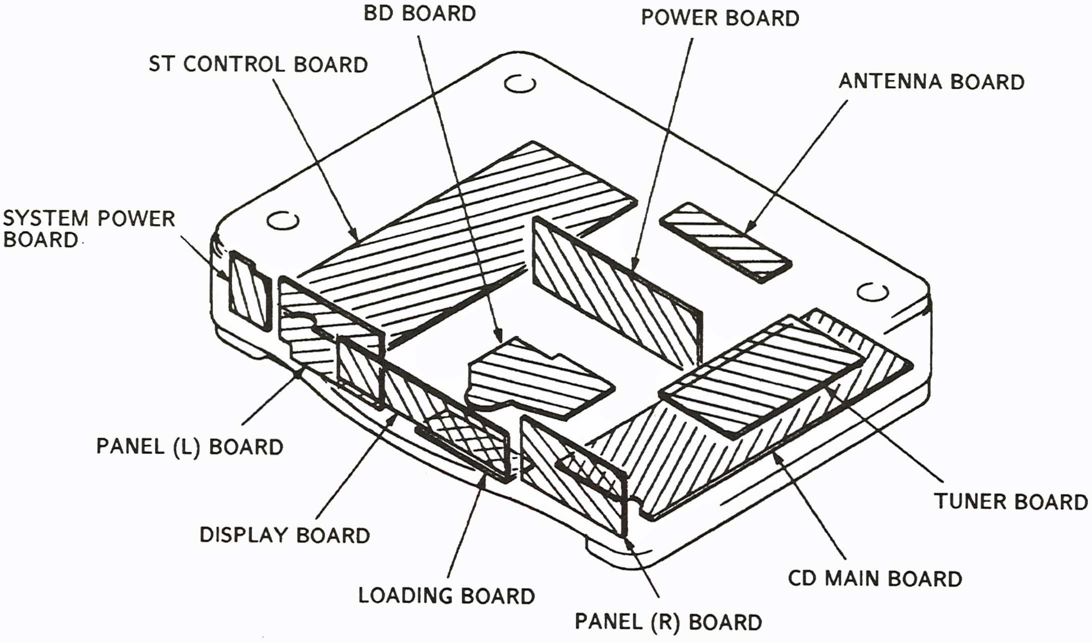

RV52 :
FM TUNED INDICATION
LIGHTING LEVEL
TP51
IC51
RV51 :
MW(AM)M TUNED INDICATION
LIGHTING LEVEL
IFT51 :
FM NULL

SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM


E MODEL
TM901 ANTENNA
FM 75Ω
AM
FE1 FRONT END
ANT IN
IF OUT
VT
F OUT
B+
CF1
Q1 RF AMP
CF51
Q3 SWITCHING
IC51 FM IF, AM IF
FM IN
FM DET OUT
MPX IN
AM MIX
AM IF
AM RF IN
AM OSC
VREF
FM AFC
L CH
R CH
VCO
DET
TUNED LED
STEREO LED
MUTE
AM SD ADJ
FM SD ADJ
Q51 LPF
Q52 LPF
LPF
LPF51 (1/2)
LPF51 (2/2)
X51 19KHz
IFT51
IFT52
SIGNAL
STEREO
MUTING
Q53 MUTING SWITCH
RV51 MW (AM) TUNED LEVEL
RV52 FM TUNED LEVEL
TP51
FE2 (MW)
Q22, 23 LPF
IC21 PLL
X IN
X OUT
X21 7.2MHz
CE
DATA IN
CLOCK
DATA OUT
VCO STOP
FM
FM IF
AM IF
IF REQ
AM OSC
AM/FM
IF BUFF
D51
B+ (+13V)
AEP, Germany MODEL
FM 75Ω COAXIAL
AEP MODEL
CF2
Q2 RF AMP
Germany MODEL
FE3 (LW)
Q4 SWITCHING
Q5 SWITCHING
Q6 SWITCHING
Q7 SWITCHING
Q24, 25 LPF
MW
LW/SW
KSS-240A OPTICAL PICK-UP BLOCK
DETECTOR
LASER DIODE
TRACKING COIL
FOCUS COIL
LD ON
RV101 TRACKING GAIN
RV102 FOCUS GAIN
IC101 FOCUS/TRACKING SLED/SPINDLE SERVO EFM COMPARATOR
COMPARATOR
PROCESSOR
MIRRAR AMP
TRACKING AMP
FOCUS AMP
SLED AMP
IC102 FOCUS/TRACKING COIL DRIVE SPINDLE/SLED MOTOR DRIVE
TRACKING COIL DRIVE
FOCUS COIL DRIVE
SLED MOTOR DRIVE
SPINDLE MOTOR DRIVE
M102 SLED MOTOR
M101 SPINDLE MOTOR
IC201 DIGITAL SIGNAL PROCESSOR CLV SERVO
XRST
DOTX
XTAI
BCLK
DATA
LRCK
IC209 DIGITAL OUTPUT OPTICAL
IC202 DIGITAL FILTER
X201 22.5MHz
IC203 D/A CONVERTER
IC204 LINE AMP
IC205 LINE AMP
Q206, 208 MUTING
Q205, 207 MUTING
IC208 TUNER/CD SELECT SWITCH
CN208 SYSTEM CONTROL FROM TA-VF1
L-CH
R-CH
BUS
D205
IC301 CD SYSTEM CONTROL
X301 4MHz
S101 LIMIT SWITCH
Q101 DEFECT SWITCH
Q301 AUDIO BUS SWITCH
D302
D601
D602 CONTINUE
D603 SHUFFLE
D604 PROGRAM
PLAYLD
CONTLD
SHUFLD
PGMLD
S292 LOAD IN
S291 LOAD OUT
IC206 LOADING MOTOR DRIVE
LOGIC
M103 LOADING MOTOR
Q211
Q212
D204
IC207 AUDIO AMP
Q210 REG
IC401 SYSTEM CONTROL
Q402 AUDIO BUS SWITCH
D403
Q401 RESET
Q702, 703 SWITCH
Q21 +5V REG
D21
IC21 (9Pin)
KEY MATRIX S601-623
X401 4.19MHz
IC501 LCD DRIVE
FL501 FLUORESCENT INDICATOR TUBE
IC802 +7V REG
IC801 +5V REG
IC803 -5V REG
PT801 POWER TRANSFORMER
D801
D802
D803
D804
IC703 -32V REG
D702
D707
D706
D708
TO FL501
Q701 RELAY SWITCH
RY701
IC701 +5V/+13V REG RESET
CNP901 AC IN
CNJ701 AC OUTLET SWITCHED 150W MAX
E MODEL
CNJ901 AC OUTLET SWITCHED 150W MAX
AEP, Germany MODEL
A
B
C
D

3-2. CIRCUIT BOARDS LOCATION


BD BOARD
POWER BOARD
ST CONTROL BOARD
ANTENNA BOARD
SYSTEM POWER BOARD
PANEL (L) BOARD
DISPLAY BOARD
LOADING BOARD
PANEL (R) BOARD
CD MAIN BOARD
TUNER BOARD

• Semiconductor Location

AEP, Germany model

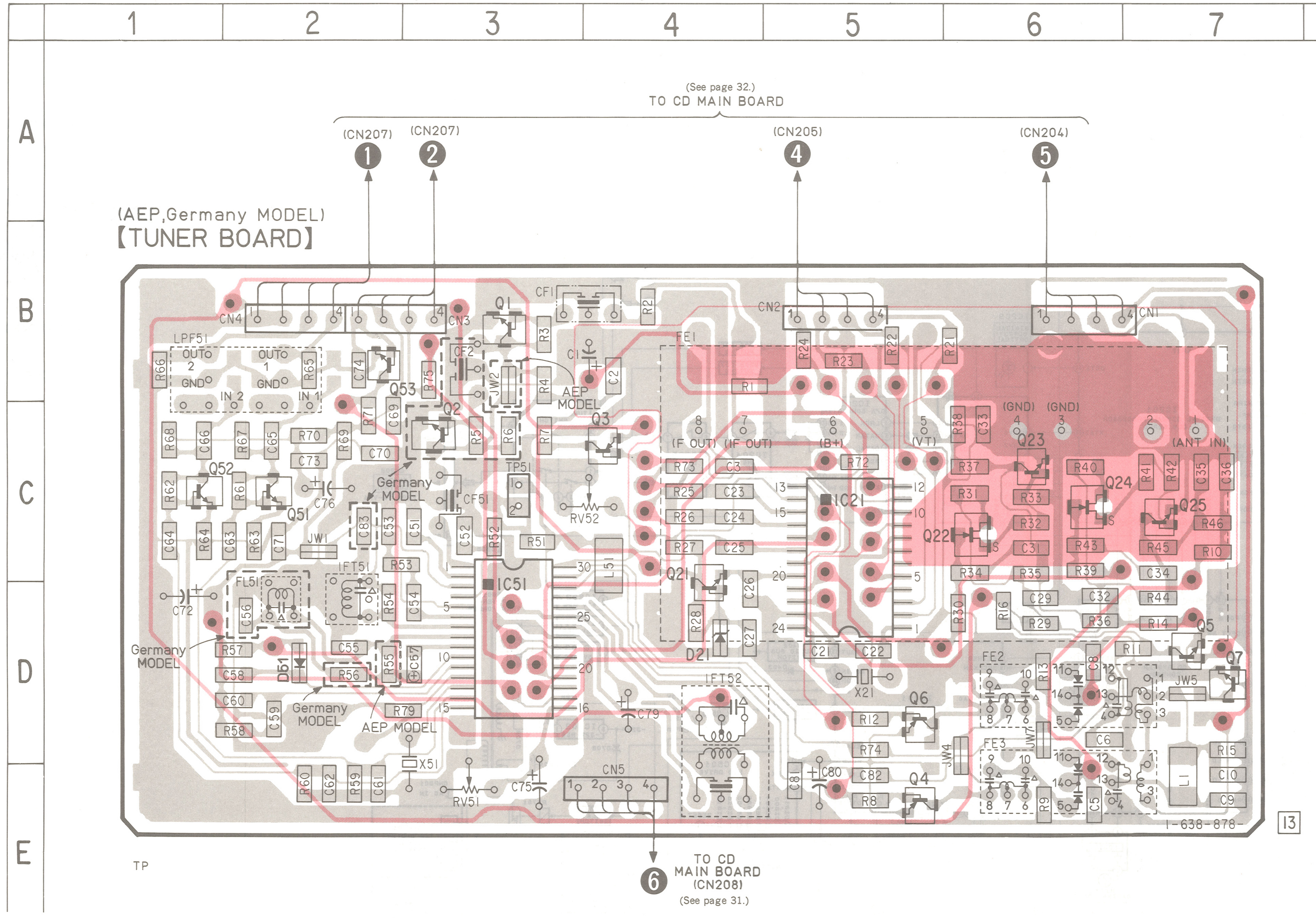
Ref. No.	Location
D21	D-4
D51	D-2
IC21	C-5
IC51	D-3
Q1	B-3
Q2	C-3
Q3	C-4
Q4	E-5
Q5	D-7
Q6	D-5
Q7	D-7
Q21	C-4
Q22	C-6
Q23	C-6
Q24	C-6
Q25	C-7
Q51	C-2
Q52	C-1
Q53	B-2

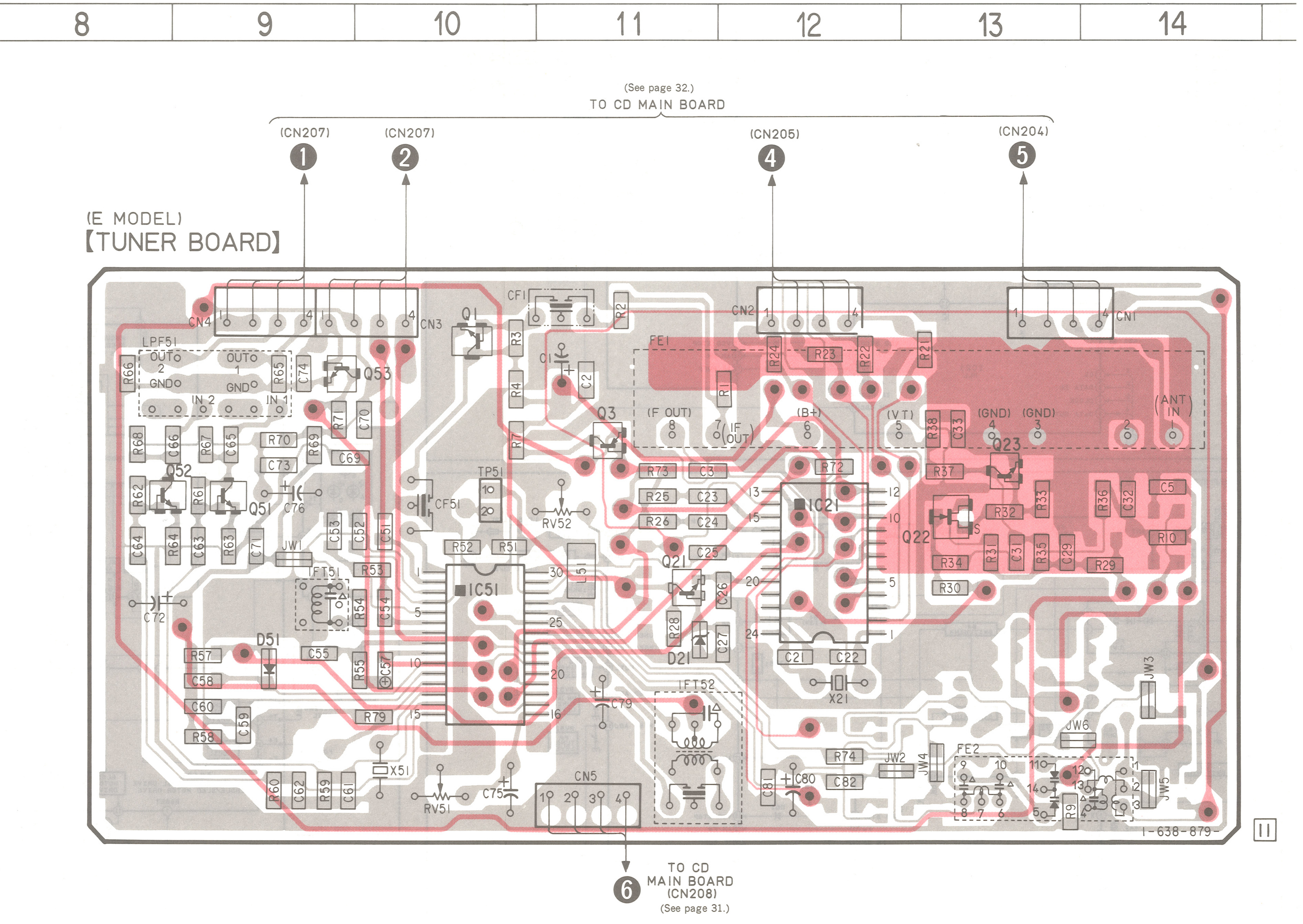
E model

Ref. No.	Location
D21	D-11
D51	D-9
IC21	C-12
IC51	D-10
Q1	B-10
Q3	C-11
Q21	C-11
Q22	C-13
Q23	C-13
Q51	C-9
Q52	C-8
Q53	B-9

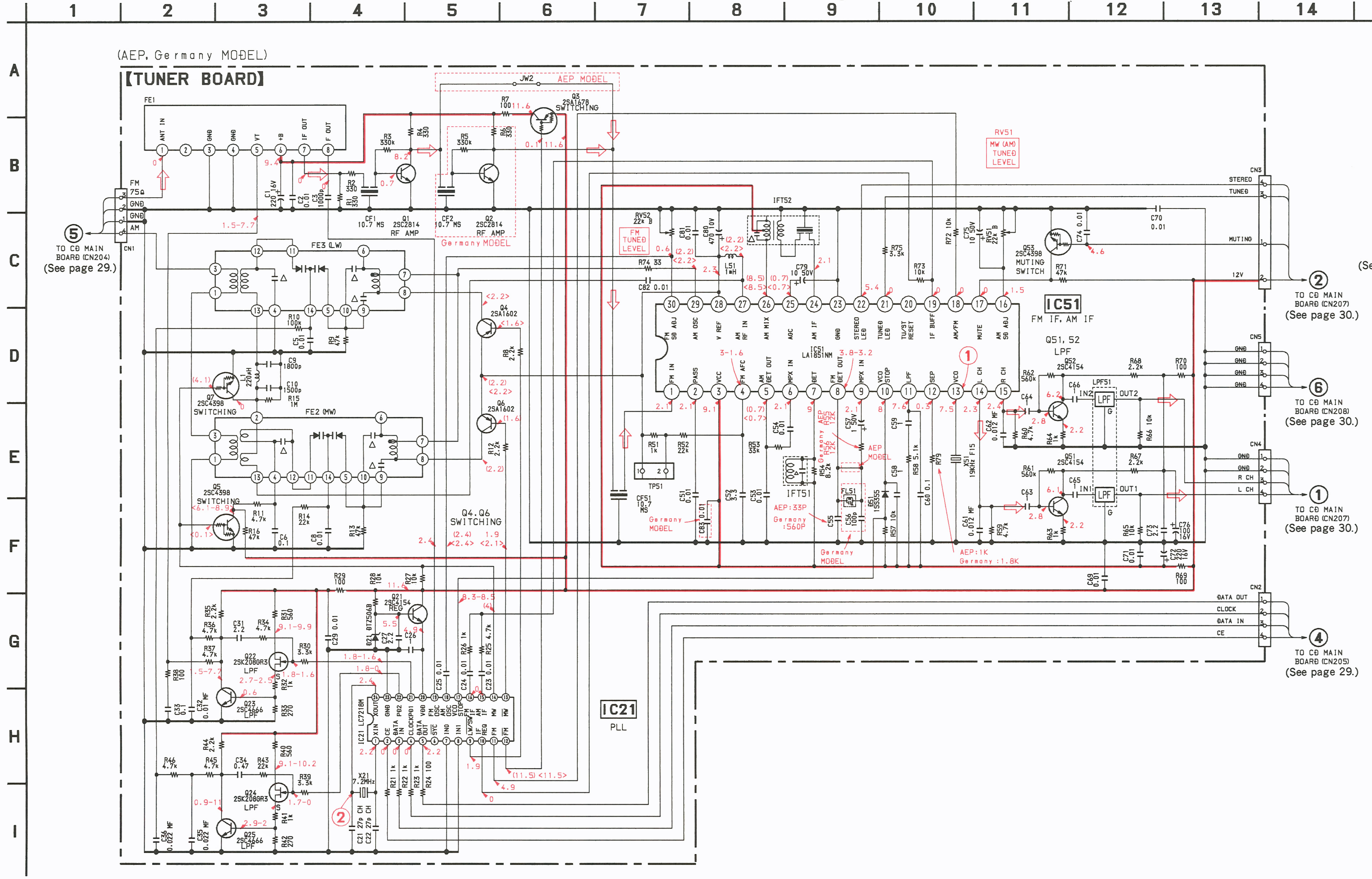
Note:
- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

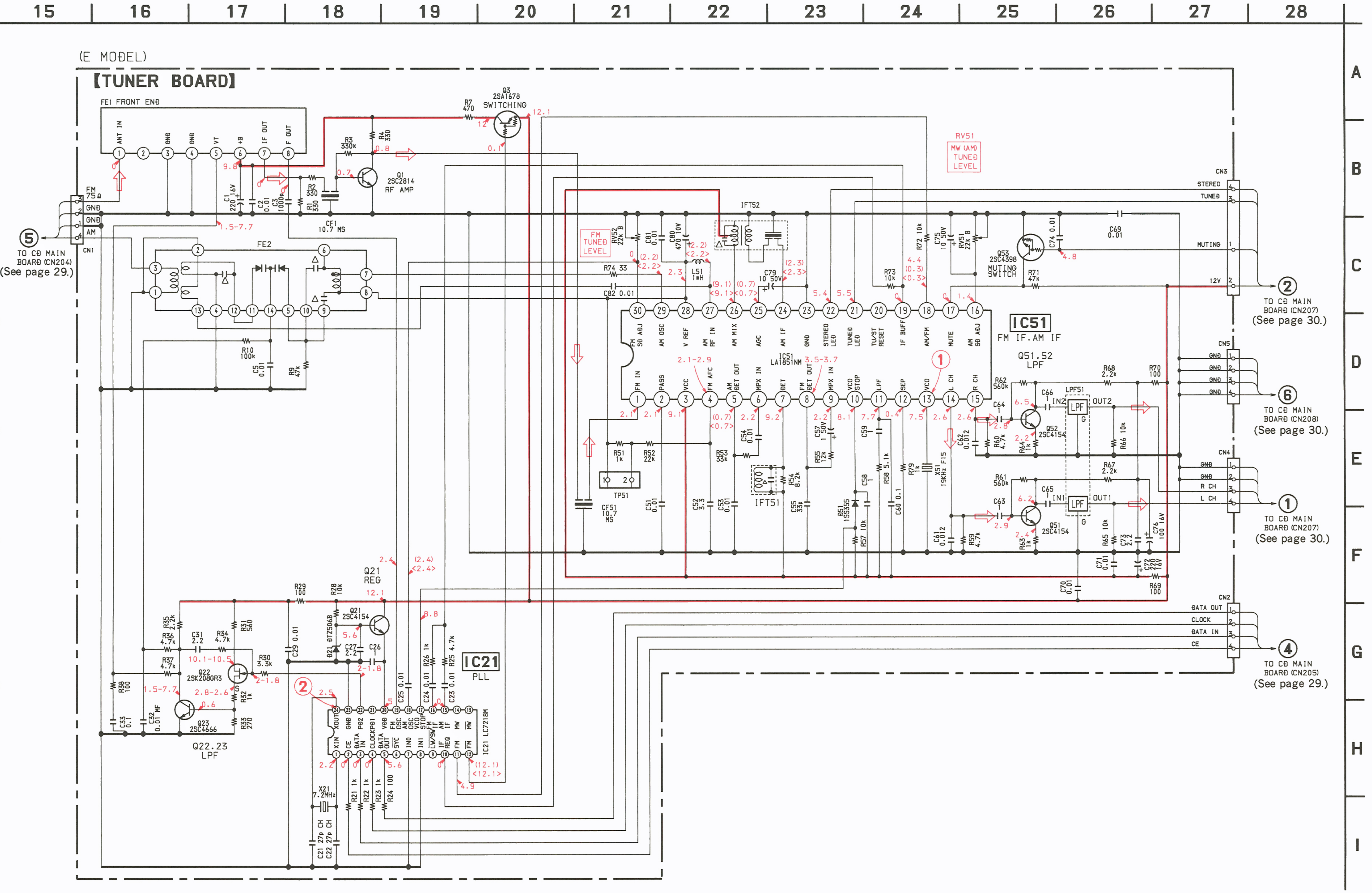
3-3. PRINTED WIRING BOARDS—TUNER SECTION— • Refer to page 19 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
A
B
C
D
E
(See page 32.)
TO CD MAIN BOARD
(CN207) ①
(CN207) ②
(CN205) ④
(CN204) ⑤
(AEP,Germany MODEL)
【TUNER BOARD】
CN4
CN3
CN2
CN1
CN5
LPF51
CF1
FE1
FE2
FE3
IC21
IC51
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q21
Q22
Q23
Q24
Q25
Q51
Q52
Q53
D21
D51
X21
X51
RV51
RV52
IFT51
IFT52
FL51
CF51
TP51
JW1
JW2
JW4
JW5
Germany MODEL
AEP MODEL
(IF OUT)
(B+)
(VT)
(GND)
(ANT IN)
TP
1-638-878-
13
⑥ TO CD MAIN BOARD (CN208) (See page 31.)

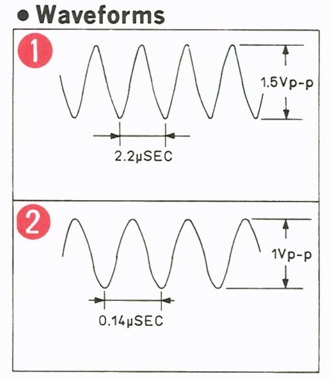

8
9
10
11
12
13
14
(See page 32.)
TO CD MAIN BOARD
(CN207) ①
(CN207) ②
(CN205) ④
(CN204) ⑤
(E MODEL)
【TUNER BOARD】
CN4
CN3
CN2
CN1
CN5
LPF51
CF1
FE1
FE2
IC21
IC51
Q1
Q3
Q21
Q22
Q23
Q51
Q52
Q53
D21
D51
X21
X51
RV51
RV52
IFT51
IFT52
CF51
TP51
JW1
JW2
JW3
JW4
JW5
JW6
(F OUT)
(IF OUT)
(B+)
(VT)
(GND)
(ANT IN)
1-638-879-
11
⑥ TO CD MAIN BOARD (CN208) (See page 31.)

3-4. SCHEMATIC DIAGRAM—TUNER SECTION— • Refer to page 33 for Front End Scnematic Diagrams and IC Block Diagrams.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
(AEP, Germany MODEL)
【TUNER BOARD】
FE1
AEP MODEL
FE3 (LW)
FE2 (MW)
Q1 2SC2814 RF AMP
Q2 2SC2814 RF AMP
Germany MODEL
Q3 2SA1678 SWITCHING
Q4 2SA1602
Q5 2SC4398 SWITCHING
Q6 2SC4398 SWITCHING
Q4, Q6 SWITCHING
Q53 2SC4398 MUTING SWITCH
IFT52
IFT51
RV52 FM TUNED LEVEL
RV51 MW (AM) TUNED LEVEL
IC51 FM IF, AM IF
Q51, 52 LPF
LPF
OUT1
OUT2
IC21 PLL
Q22 2SK208(R)
Q23 2SC4666
Q24 2SK208(R)
Q25 2SC4666
⑤ TO CD MAIN BOARD (CN204) (See page 29.)
② TO CD MAIN BOARD (CN207) (See page 30.)
⑥ TO CD MAIN BOARD (CN208) (See page 30.)
① TO CD MAIN BOARD (CN207) (See page 30.)
④ TO CD MAIN BOARD (CN205) (See page 29.)
STEREO
TUNED
MUTING
12V
DATA OUT
CLOCK
DATA IN
CE
R CH
L CH


15
16
17
18
19
20
21
22
23
24
25
26
27
28
A
B
C
D
E
F
G
H
I
(E MODEL)
【TUNER BOARD】
FE1 FRONT END
FE2
Q3 2SA1678 SWITCHING
Q1 2SC2814 RF AMP
Q53 2SC4398 MUTING SWITCH
RV52 FM TUNED LEVEL
RV51 MW (AM) TUNED LEVEL
IFT52
IFT51
IC51 FM IF, AM IF
Q51, 52 LPF
Q21 REG
IC21 PLL
Q22, 23 LPF
⑤ TO CD MAIN BOARD (CN204) (See page 29.)
② TO CD MAIN BOARD (CN207) (See page 30.)
⑥ TO CD MAIN BOARD (CN208) (See page 30.)
① TO CD MAIN BOARD (CN207) (See page 30.)
④ TO CD MAIN BOARD (CN205) (See page 29.)

• Waveforms

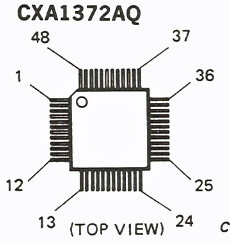


Note:

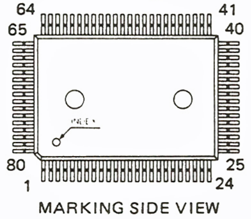
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.
- ▬ : B+ Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : MW
  〈 〉 : LW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM

3-5. SEMICONDUCTOR LEAD LAYOUTS

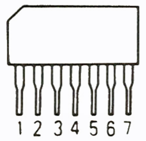
CXA1372AQ


48
37
1
36
12
25
13
(TOP VIEW)
24

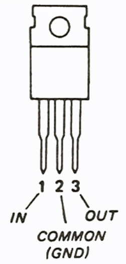
CXD2500AQ


64
41
65
40
80
25
1
24
MARKING SIDE VIEW

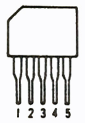
LA5667



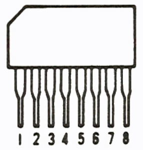
M5F78M07L
TA7805S


1 2 3
IN
OUT
COMMON
(GND)

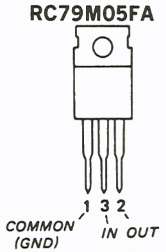
M5293L



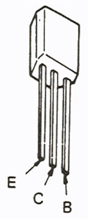
M54641L



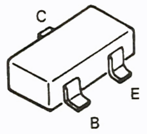
RC79M05FA


1 3 2
COMMON
(GND)
IN
OUT

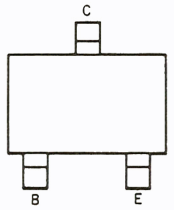
DTA144ES
DTC114ES
2SC2603-EF



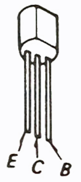
DTC144EK
2SA1602
2SC2814-F4
2SC4154
2SC4666B



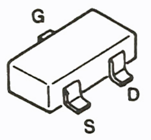
2SA1678
2SC4398



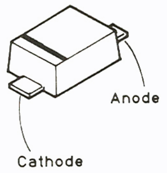
2SB1116A-L
2SC2878-AB



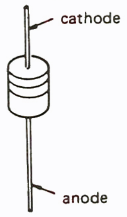
2SK208GR3



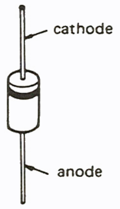
MA8056-TX


Anode
Cathode

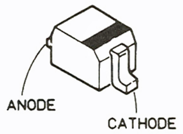
UZL-7L2
11EQS04


cathode
anode

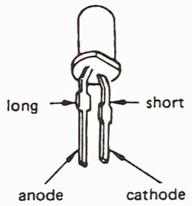
1N4148M
10E2N


cathode
anode

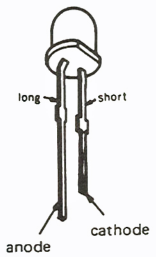
1SS352


ANODE
CATHODE

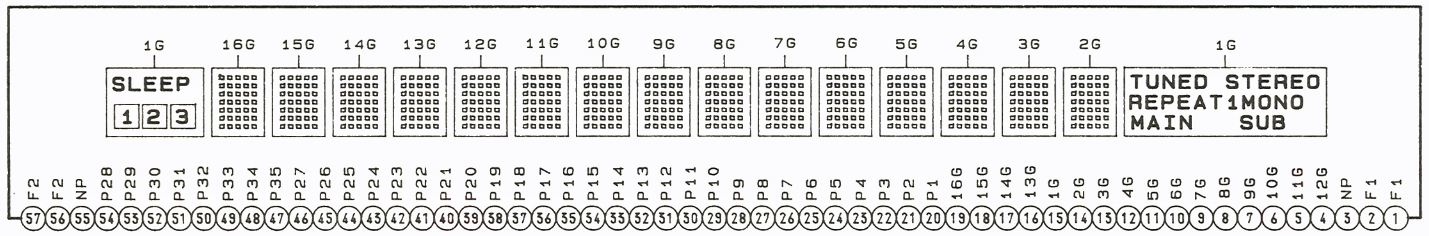
SEL2210S-CD


long
short
anode
cathode

SEL2810A

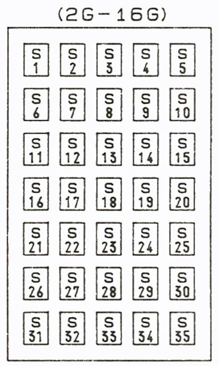

long
short
anode
cathode

FL501 FLUORESCENT INDICATOR TUBE


1G
16G
15G
14G
13G
12G
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
SLEEP
1 2 3
TUNED STEREO
REPEAT 1 MONO
MAIN SUB
57 F2
56 F2
55 NP
54 P28
53 P29
52 P30
51 P31
50 P32
49 P33
48 P34
47 P35
46 P27
45 P26
44 P25
43 P24
42 P23
41 P22
40 P21
39 P20
38 P19
37 P18
36 P17
35 P16
34 P15
33 P14
32 P13
31 P12
30 P11
29 P10
28 P9
27 P8
26 P7
25 P6
24 P5
23 P4
22 P3
21 P2
20 P1
19 16G
18 15G
17 14G
16 13G
15 1G
14 2G
13 3G
12 4G
11 5G
10 6G
9 7G
8 8G
7 9G
6 10G
5 11G
4 12G
3 NP
2 F1
1 F1

ANODE CONNECTION

	16G - 2G	1G
P1	S1	–
P2	S2	–
P3	S3	–
P4	S4	–
P5	S5	–
P6	S6	–
P7	S7	–
P8	S8	–
P9	S9	–
P10	S10	–
P11	S11	–
P12	S12	–
P13	S13	–
P14	S14	–
P15	S15	–
P16	S16	–
P17	S17	–
P18	S18	–
P19	S19	–
P20	S20	–
P21	S21	–
P22	S22	–
P23	S23	–
P24	S24	–
P25	S25	SLEEP
P26	S26	1
P27	S27	2
P28	S28	3
P29	S29	TUNED
P30	S30	STEREO
P31	S31	REPEAT
P32	S32	1
P33	S33	MONO
P34	S34	MAIN
P35	S35	SUB


(2G−16G)
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25
S26
S27
S28
S29
S30
S31
S32
S33
S34
S35

• Semiconductor Location

Ref. No.	Location
D401	F-5
D402	H-5
D403	E-2
D404	F-3
D405	G-3
D406	G-3
D407	G-3
D408	G-3
D409	G-3
D411	G-5
D413	G-5
D601	I-16
D602	I-13
D603	I-14
D604	I-14
D701	D-3
D702	C-5
D706	D-4
D707	D-4
D708	D-4
D801	C-11
D802	C-11
D803	B-11
D804	B-11
IC401	G-4
IC501	F-10
IC701	D-5
IC703	E-4
IC801	C-12
IC802	C-13
IC803	B-12
Q401	F-15
Q402	E-2
Q701	D-3
Q702	E-3
Q703	E-3

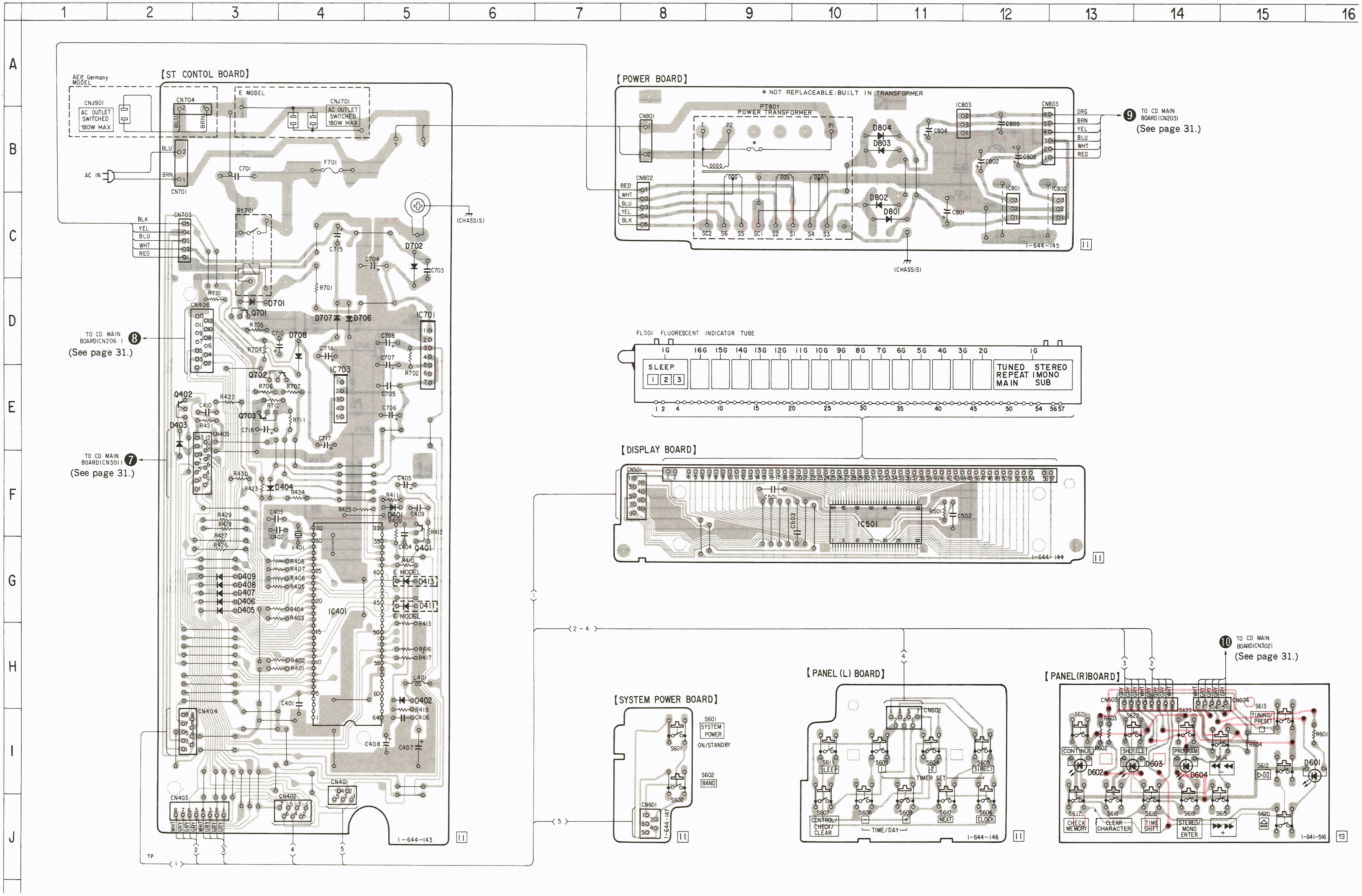
Note:
- ○—— : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

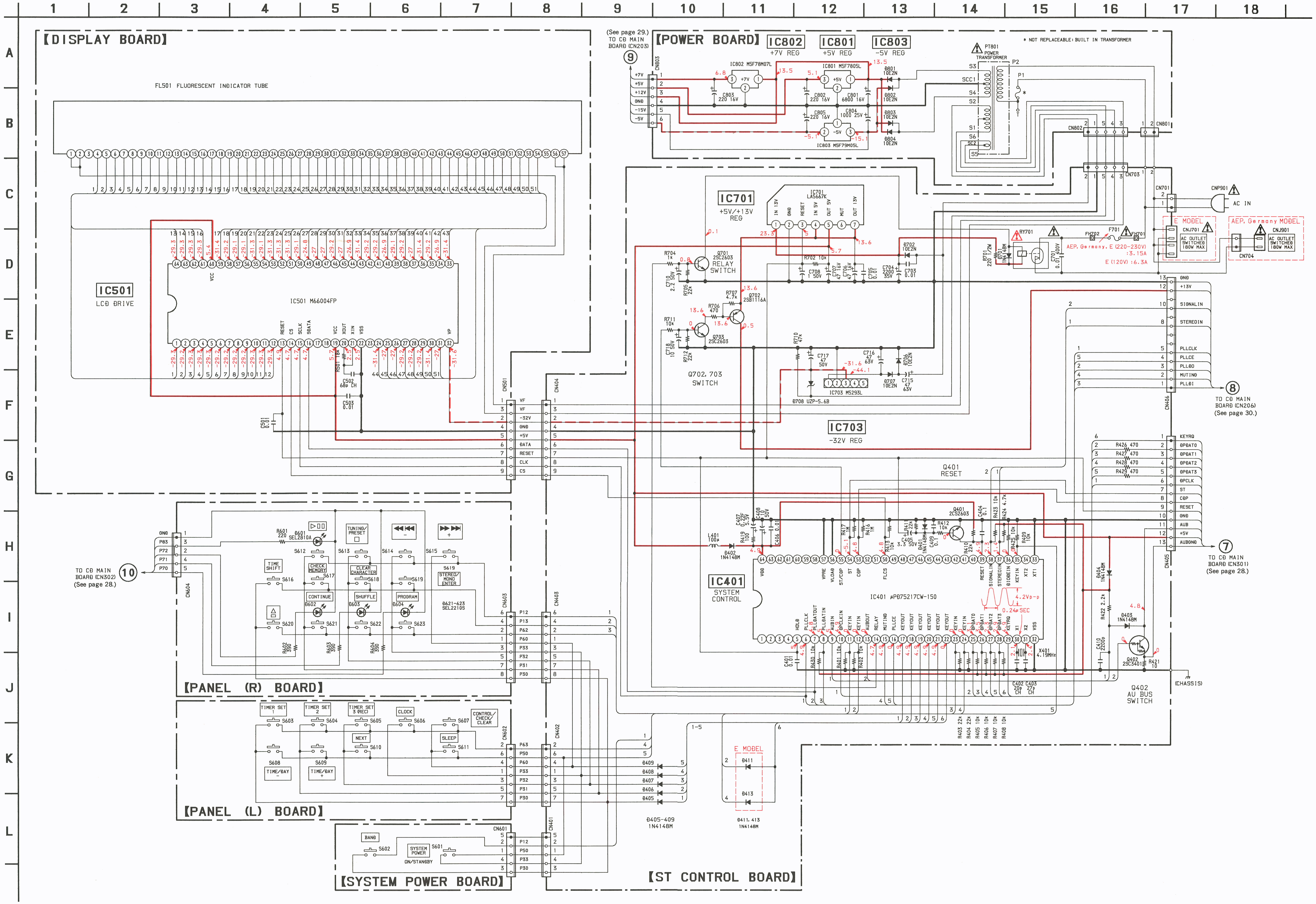
• Semiconductor Location

Ref. No.	Location
D401	F-5
D402	H-5
D403	E-2
D404	F-3
D405	G-3
D406	G-3
D407	G-3
D408	G-3
D409	G-3
D411	G-5
D413	G-5
D601	I-16
D602	I-13
D603	I-14
D604	I-14
D701	D-3
D702	C-5
D706	D-4
D707	D-4
D708	D-4
D801	C-11
D802	C-11
D803	B-11
D804	B-11
IC401	G-4
IC501	F-10
IC701	D-5
IC703	E-4
IC801	C-12
IC802	C-13
IC803	B-12
Q401	F-15
Q402	E-2
Q701	D-3
Q702	E-3
Q703	E-3

arts extracted from the component side.
hrough hole.
attern on the side which is seen.
attern of the rear side.

3-6. PRINTED WIRING BOARDS—DISPLAY/SYSTEM CONTROL/POWER SECTION—


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
[ST CONTOL BOARD]
AEP Germany MODEL
CNJ901
AC OUTLET SWITCHED 180W MAX
E MODEL
CNJ701
AC OUTLET SWITCHED 180W MAX
CN704
AC IN
CN701
F701
C701
RY701
CN703
BLK
YEL
BLU
WHT
RED
(CHASSIS)
D702
C703
C704
C715
R701
R710
D701
Q701
CN406
D707
D706
IC701
TO CD MAIN BOARD(CN206) ⑧
(See page 31.)
R705
C710
D708
R704
C716
C708
C707
Q702
IC703
R702
R706
R707
Q402
R422
R712
C705
C706
C410
R421
D403
Q703
R711
C718
C717
CN405
TO CD MAIN BOARD(CN301) ⑦
(See page 31.)
R430
D404
R423
R424
C405
R411
D401
C409
R425
R409
R412
R429
R428
C403
C402
R427
R426
X401
C404
Q401
R410
R408
R407
R406
R405
E MODEL
D413
D409
D408
D407
D406
D405
R404
R403
IC401
D411
E MODEL
R413
R416
R417
R402
R401
L401
D402
C401
R419
C406
CN404
C408
C407
CN401
CN402
CN403
TP
1-644-143
[POWER BOARD]
* NOT REPLACEABLE: BUILT IN TRANSFORMER
PT801
POWER TRANSFORMER
CN801
CN802
IC803
CN803
C805
C804
D804
D803
C802
C803
IC801
IC802
D802
D801
C801
ORG
BRN
YEL
BLU
WHT
RED
TO CD MAIN BOARD(CN203) ⑨
(See page 31.)
(CHASSIS)
1-644-145
FL501 FLUORESCENT INDICATOR TUBE
SLEEP
TUNED STEREO
REPEAT MONO
MAIN SUB
[DISPLAY BOARD]
CN501
C501
C503
IC501
R501
C502
1-644-144
[SYSTEM POWER BOARD]
S601
SYSTEM POWER
ON/STANDBY
S602
BAND
CN601
1-644-147
[PANEL (L) BOARD]
CN602
S611 SLEEP
S603 1
S604 2
S605 3(REC)
TIMER SET
S607 CONTROL/CHECK/CLEAR
S608
S609
S610 NEXT
S606 CLOCK
TIME/DAY
1-644-146
[PANEL(R)BOARD]
TO CD MAIN BOARD(CN302) ⑩
(See page 31.)
CN603
CN604
S621
S622
S623
S613 TUNING/PRESET
R603
R601
CONTINUE
R602
SHUFFLE
PROGRAM
R604
S614
S612
D602
D603
D604
D601
S617 CHECK MEMORY
S618 CLEAR CHARACTER
S616 TIME SHIFT
S619 STEREO/MONO ENTER
S615
S620
1-641-516


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L
[DISPLAY BOARD]
FL501 FLUORESCENT INDICATOR TUBE
IC501
LCD DRIVE
IC501 M66004FP
[POWER BOARD]
IC802
+7V REG
IC801
+5V REG
IC803
-5V REG
IC802 MSF78M07L
IC801 MSF7805L
IC803 MSF79M05L
(See page 29.)
TO CD MAIN BOARD (CN205)
⑨
* NOT REPLACEABLE: BUILT IN TRANSFORMER
PT801 POWER TRANSFORMER
CN801
CN802
CN703
CN701
CNP901
AC IN
E MODEL
AEP, Germany MODEL
CNJ701
CNJ901
AC OUTLET SWITCHED 180W MAX
CN704
RY701
F701
AEP, Germany, E (220-230V) : 3.15A
E (120V) : 6.3A
IC701
+5V/+13V REG
IC701 LA5667K
Q701 2SC2603 RELAY SWITCH
Q702 2SB1116A
Q703 2SC2603
Q702, 703 SWITCH
IC703
-32V REG
IC703 M5293L
D708 UZP-5.6B
CN406
⑧
TO CD MAIN BOARD (CN206) (See page 30.)
CN405
⑦
TO CD MAIN BOARD (CN301) (See page 28.)
Q401 RESET
Q401 2SC2603
IC401
SYSTEM CONTROL
IC401 μPD75217CW-150
X401 4.19MHz
Q402 2SC3401
Q402 AU BUS SWITCH
Q403 1N4148M
(CHASSIS)
4.2Vp-p
0.24μSEC
CN501
CN404
CN403
CN402
CN401
CN601
CN603
CN602
CN604
TO CD MAIN BOARD (CN302) (See page 28.)
⑩
[PANEL (R) BOARD]
TIME SHIFT
CHECK MEMORY
CONTINUE
CLEAR CHARACTER
SHUFFLE
PROGRAM
TUNING/PRESET
CLOCK
STEREO/MONO ENTER
D621-623 SEL2210S
D601 SEL2810A
[PANEL (L) BOARD]
TIMER SET 1
TIMER SET 2
TIMER SET 3 (REC)
CLOCK
CONTROL/CHECK/CLEAR
NEXT
SLEEP
TIME/DAY -
TIME/DAY +
[SYSTEM POWER BOARD]
BAND
SYSTEM POWER ON/STANDBY
D405-409 1N4148M
E MODEL
D411, 413 1N4148M
[ST CONTROL BOARD]

Note:
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.

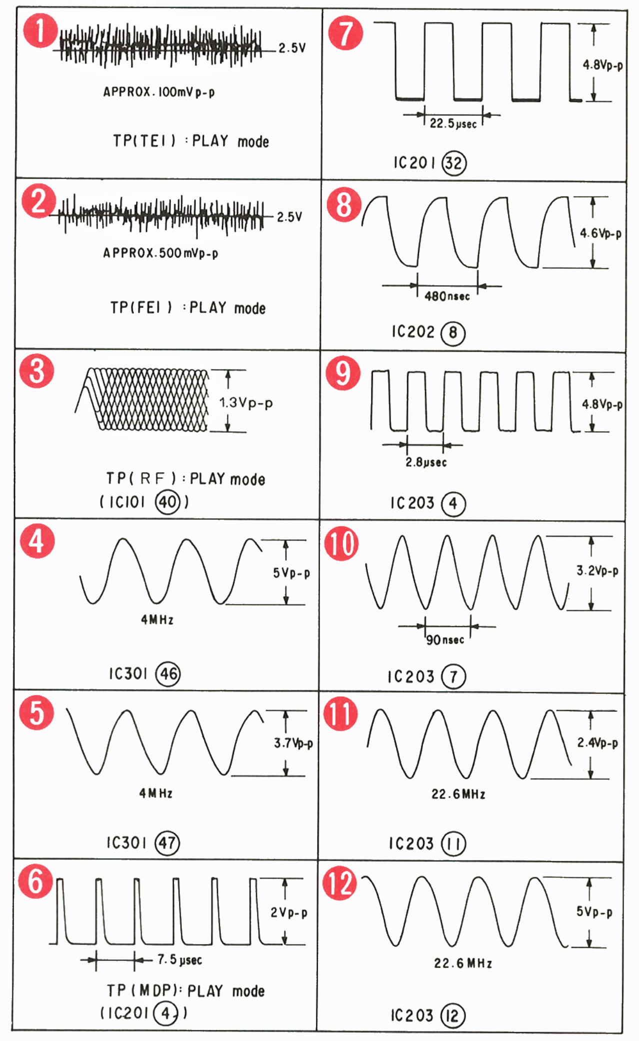
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

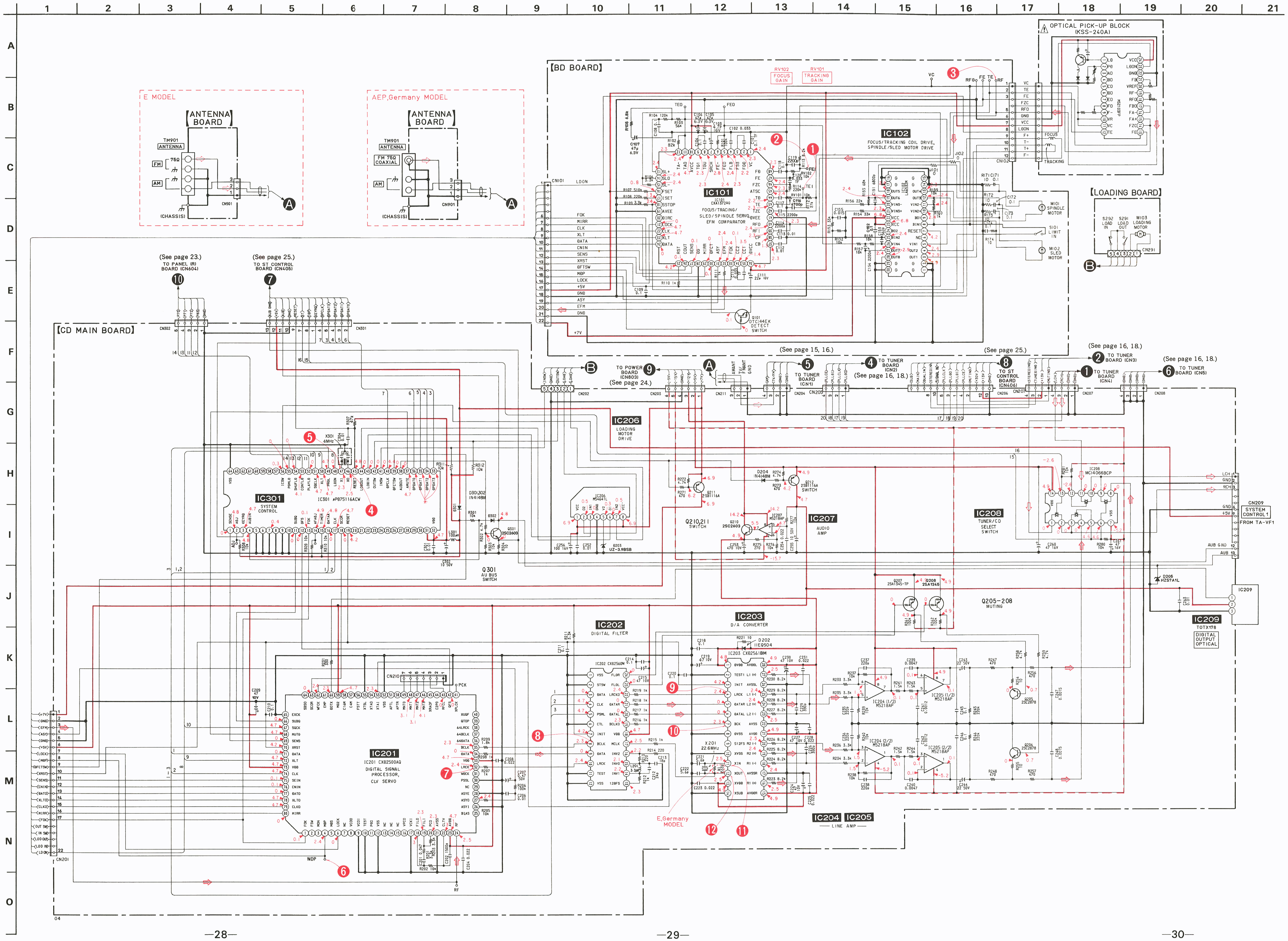
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B– Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

  no mark : CD STOP
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

3-8. SCHEMATIC DIAGRAM—CD SECTION— • Refer to page 33 for IC Block Diagrams.

- **Waveforms**





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11
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14
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16
17
18
19
20
21
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
E MODEL
AEP,Germany MODEL
[ANTENNA BOARD]
TM901 ANTENNA
FM 75Ω
FM 75Ω COAXIAL
AM
(CHASSIS)
CN901
[BD BOARD]
RV102 FOCUS GAIN
RV101 TRACKING GAIN
IC101
CXA1082AQ
FOCUS/TRACKING/SLED/SPINDLE SERVO, EFM COMPARATOR
IC102
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED MOTOR DRIVE
Q101 DTC144EK DETECT SWITCH
OPTICAL PICK-UP BLOCK (KSS-240A)
[LOADING BOARD]
M101 SPINDLE MOTOR
M102 SLED MOTOR
S101 LIMIT IN
S292 LOAD IN
S291 LOAD OUT
M103 LOADING MOTOR
CN291
CN101
CN102
(See page 23.) TO PANEL (R) BOARD (CN604)
(See page 25.) TO ST CONTROL BOARD (CN405)
[CD MAIN BOARD]
CN302
CN301
TO POWER BOARD (CN803) (See page 24.)
(See page 15, 16.) TO TUNER BOARD (CN1)
TO TUNER BOARD (CN2) (See page 16, 18.)
(See page 25.) TO ST CONTROL BOARD (CN406)
(See page 16, 18.) TO TUNER BOARD (CN3)
TO TUNER BOARD (CN4)
(See page 16, 18.) TO TUNER BOARD (CN6)
IC301
SYSTEM CONTROL
IC301 μPB75116ACW
X301 4MHz
Q301 AU BUS SWITCH
IC206
LOADING MOTOR DRIVE
IC207
AUDIO AMP
Q210,211 SWITCH
IC208
TUNER/CD SELECT SWITCH
IC208 MC14066BCP
CN209 SYSTEM CONTROL 1 FROM TA-VF1
IC209
TOTX178 DIGITAL OUTPUT OPTICAL
Q205–208 MUTING
IC201
IC201 CXD2500AQ
DIGITAL SIGNAL PROCESSOR, CLV SERVO
CN201
IC202
DIGITAL FILTER
IC202 CXD2560M
IC203
D/A CONVERTER
IC203 CXD2561BM
X201 22.6MHz
E,Germany MODEL
IC204 IC205
— LINE AMP —

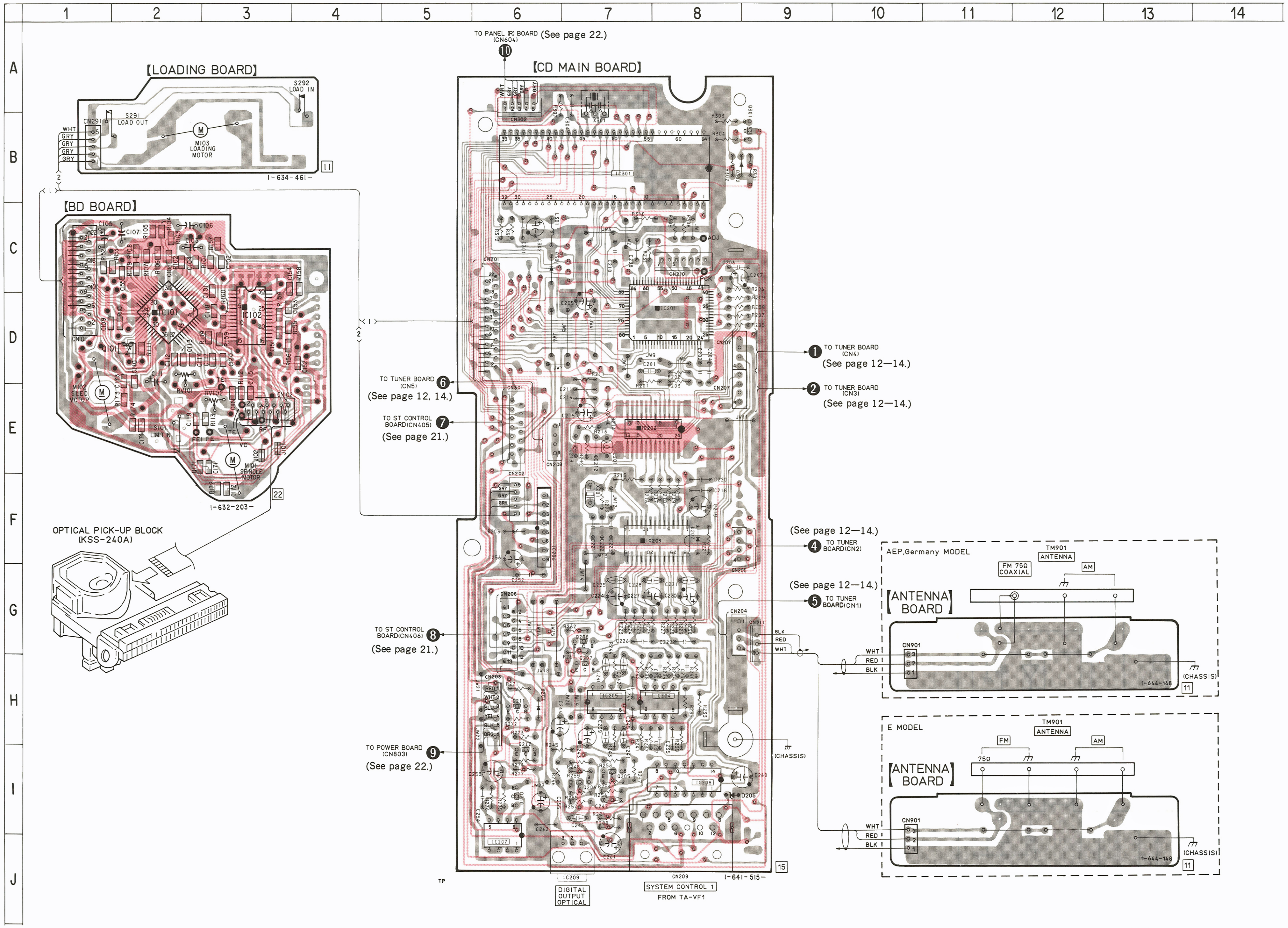
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬ : B+ Line
- ▬ ▬ ▬ : B– Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD STOP
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ⇨ : CD

3-9. PRINTED WIRING BOARDS—CD SECTION ● Refer to page 19 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
J
【LOADING BOARD】
S292 LOAD IN
S291 LOAD OUT
CN291
WHT
GRY
GRY
GRY
GRY
M103 LOADING MOTOR
1-634-461-
11
【BD BOARD】
IC101
IC102
Q101
CN101
CN102
M102 SLED MOTOR
M101 SPINDLE MOTOR
S101 LIMIT IN
RV101
RV102
1-632-203-
22
OPTICAL PICK-UP BLOCK (KSS-240A)
TO PANEL (R) BOARD (CN604) (See page 22.)
10
【CD MAIN BOARD】
IC201
IC202
IC203
IC204
IC205
IC206
IC207
IC301
CN201
CN202
CN203
CN204
CN205
CN206
CN207
CN208
CN210
CN211
CN301
CN302
X301
TO TUNER BOARD (CN5) (See page 12, 14.)
6
TO ST CONTROL BOARD (CN405) (See page 21.)
7
TO TUNER BOARD (CN4) (See page 12—14.)
1
TO TUNER BOARD (CN3) (See page 12—14.)
2
(See page 12—14.) TO TUNER BOARD (CN2)
4
(See page 12—14.) TO TUNER BOARD (CN1)
5
TO ST CONTROL BOARD (CN406) (See page 21.)
8
TO POWER BOARD (CN803) (See page 22.)
9
(CHASSIS)
BLK
RED
WHT
1-641-515-
15
IC209 DIGITAL OUTPUT OPTICAL
CN209 SYSTEM CONTROL 1 FROM TA-VF1
TP
AEP,Germany MODEL
TM901 ANTENNA
FM 75Ω COAXIAL
AM
【ANTENNA BOARD】
CN901
1-644-148
11
E MODEL
FM
75Ω

● Semiconductor Location

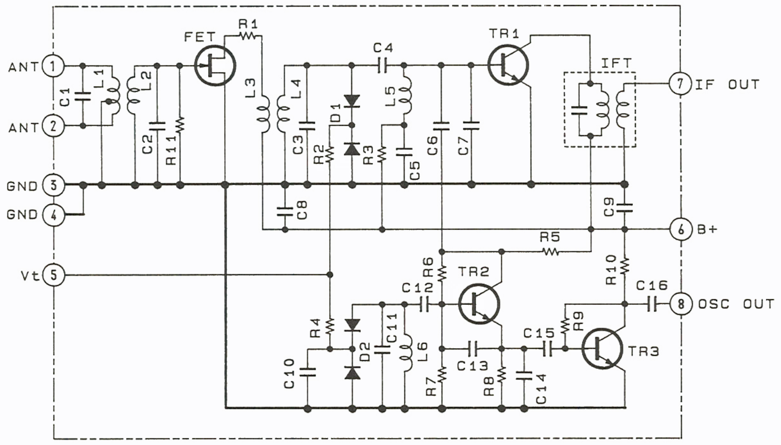
Ref. No.	Location
D202	F-8
D203	F-6
D204	H-6
D205	I-8
D301	C-6
D302	B-8
IC101	D-2
IC102	D-3
IC201	D-8
IC202	E-7
IC203	F-7
IC204	H-8
IC205	H-7
IC206	F-6
IC207	J-6
IC208	I-8
IC209	J-7
IC301	B-7
Q101	D-2
Q205	I-7
Q206	I-7
Q207	H-7
Q208	G-7
Q210	I-6
Q211	H-6
Q212	I-6
Q301	B-9

Note:

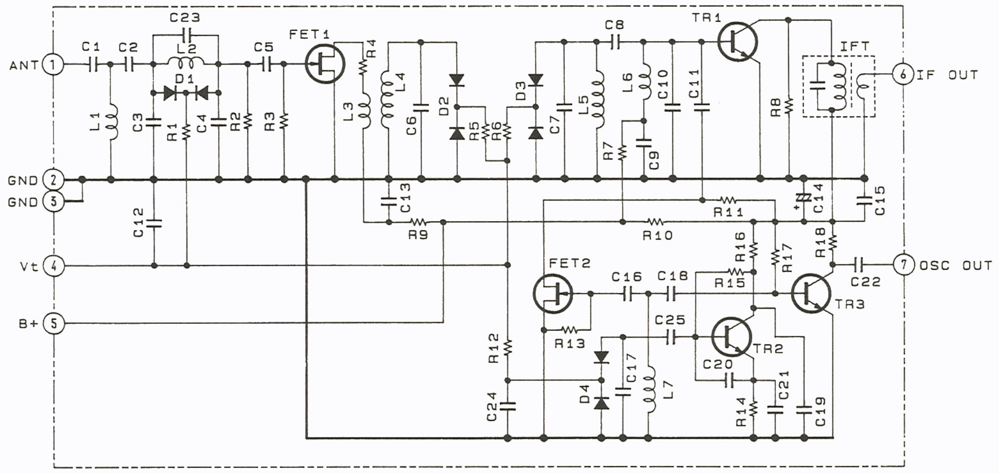
- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

• Front End Schematic Diagrams

FE1 (AEP, E model)

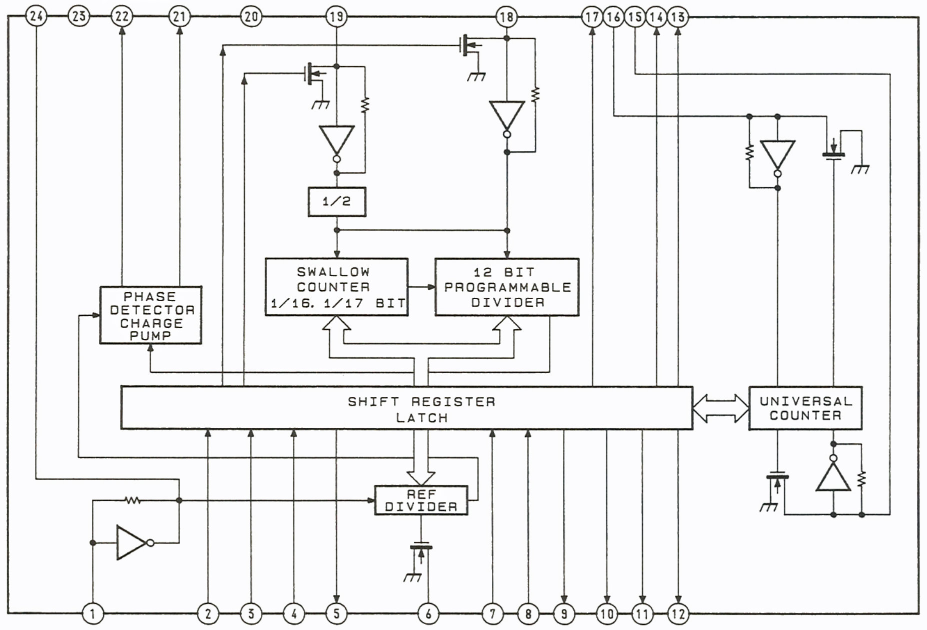

ANT ①
ANT ②
GND ⑤
GND ④
Vt ⑤
FET
R1
C1
L1
L2
C2
R11
L3
L4
C3
R2
D1
R3
C4
L5
C5
C6
C7
C8
TR1
IFT
⑦ IF OUT
C9
R5
⑥ B+
R6
C12
TR2
R10
C16
⑧ OSC OUT
R4
D2
C11
L6
C10
R7
C13
R8
C15
R9
C14
TR3

FE1 (E model)

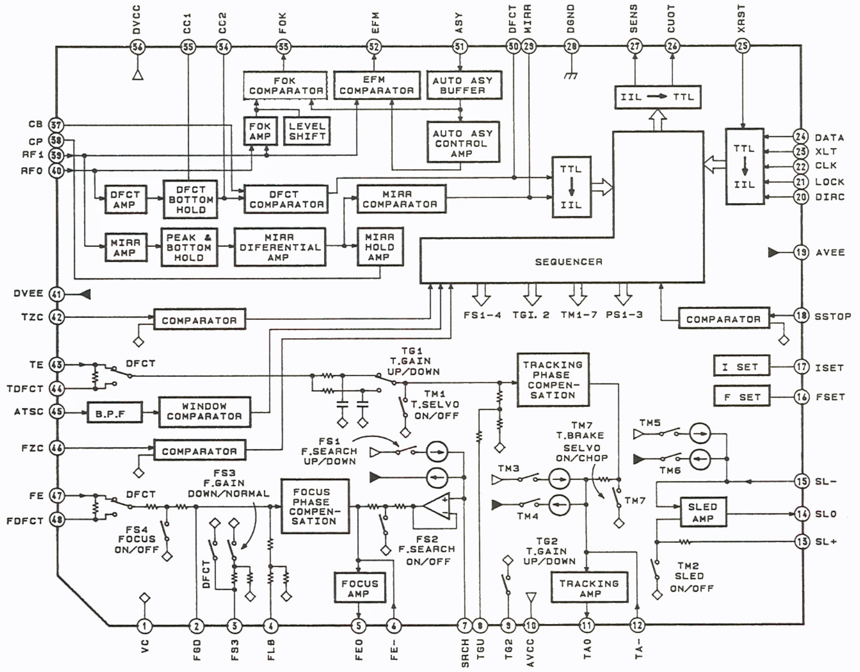

ANT ①
GND ②
GND ⑤
Vt ④
B+ ⑤
C1
C2
C23
L2
D1
C5
FET1
R4
C8
TR1
IFT
⑥ IF OUT
L1
C3
R1
C4
R2
R3
L3
L4
C6
D2
R5
R6
D3
C7
L5
L6
C10
C11
R7
C9
R8
C12
C13
R9
R11
R10
C14
C15
FET2
C16
C18
R16
R17
R18
C22
⑦ OSC OUT
R15
TR3
R12
R13
C25
C20
TR2
C17
L7
D4
C24
R14
C21
C19

• IC Block Diagram

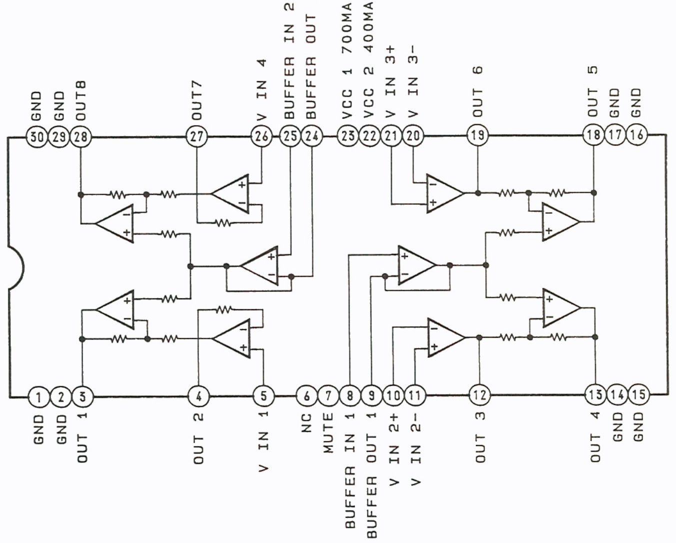
IC21 LC7218M


24
23
22
21
20
19
18
17
16
15
14
13
1/2
SWALLOW COUNTER 1/16, 1/17 BIT
12 BIT PROGRAMMABLE DIVIDER
PHASE DETECTOR CHARGE PUMP
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
REF DIVIDER
1
2
3
4
5
6
7
8
9
10
11
12

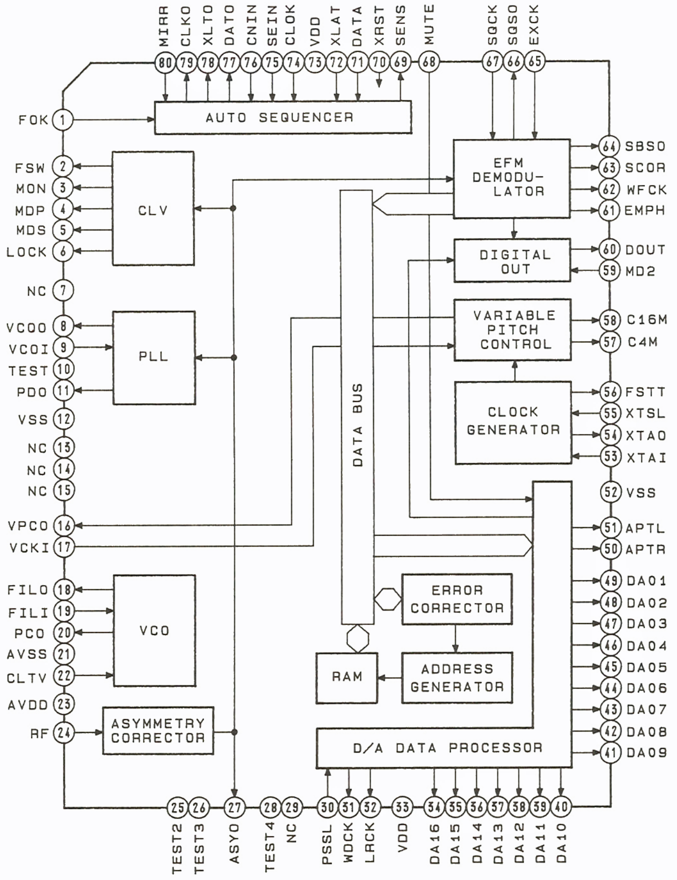
IC101 CXA1372AQ


DVCC
CC1
CC2
FOK
EFM
ASY
DFCT
MIRR
DGND
SENS
CUOT
XRST
FOK COMPARATOR
EFM COMPARATOR
AUTO ASY BUFFER
IIL → TTL
FOK AMP
LEVEL SHIFT
AUTO ASY CONTROL AMP
CB
CP
RF1
RFO
DFCT AMP
DFCT BOTTOM HOLD
DFCT COMPARATOR
MIRR COMPARATOR
TTL ↓ IIL
MIRR AMP
PEAK & BOTTOM HOLD
MIRR DIFERENTIAL AMP
MIRR HOLD AMP
SEQUENCER
DATA
XLT
CLK
LOCK
DIRC
AVEE
DVEE
TZC
COMPARATOR
FS1-4
TGI. 2
TM1-7
PS1-3
SSTOP
TE
DFCT
TG1 T.GAIN UP/DOWN
TRACKING PHASE COMPEN-SATION
I SET
ISET
F SET
FSET
TDFCT
TM1 T.SELVO ON/OFF
ATSC
B.P.F
WINDOW COMPARATOR
TM7 T.BRAKE SELVO ON/CHOP
TM5
FZC
FS1 F.SEARCH UP/DOWN
TM6
FS3 F.GAIN DOWN/NORMAL
TM3
SL-
FE
FOCUS PHASE COMPEN-SATION
TM7
TM4
SLED AMP
SLO
FDFCT
FS4 FOCUS ON/OFF
FS2 F.SEARCH ON/OFF
TG2 T.GAIN UP/DOWN
SL+
FOCUS AMP
TRACKING AMP
TM2 SLED ON/OFF
VC
FGD
FS3
FLB
FEO
FE-
SRCH
TGU
TG2
AVCC
TAO
TA-

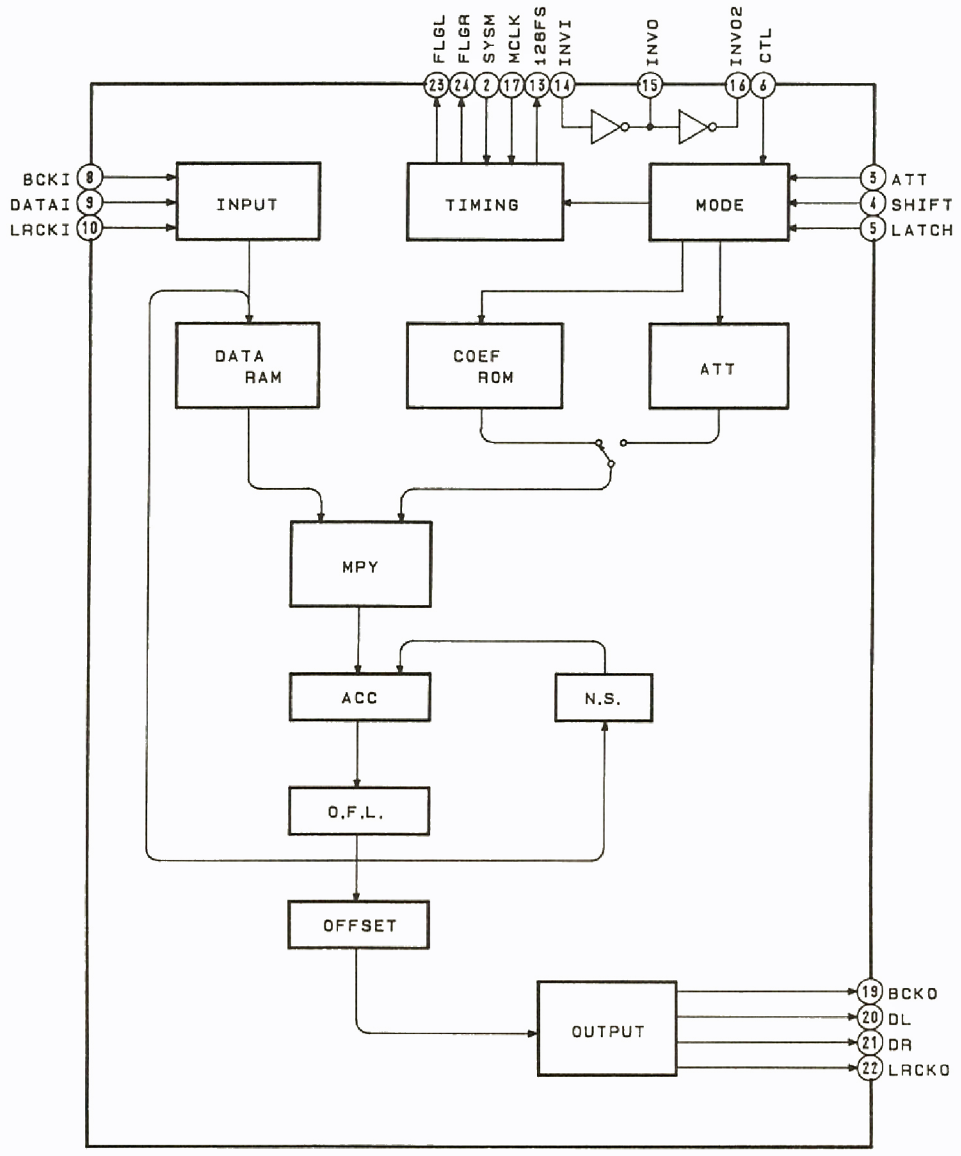
IC102 LA6532M


GND
GND
OUT8
OUT7
V IN 4
BUFFER IN 2
BUFFER OUT 2
VCC 1 700MA
VCC 2 400MA
V IN 3+
V IN 3-
OUT 6
OUT 5
GND
GND
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
GND
GND
OUT 1
OUT 2
V IN
NC
MUTE
BUFFER IN 1
BUFFER OUT 1
V IN 2+
V IN 2-
OUT 3
OUT 4
GND
GND

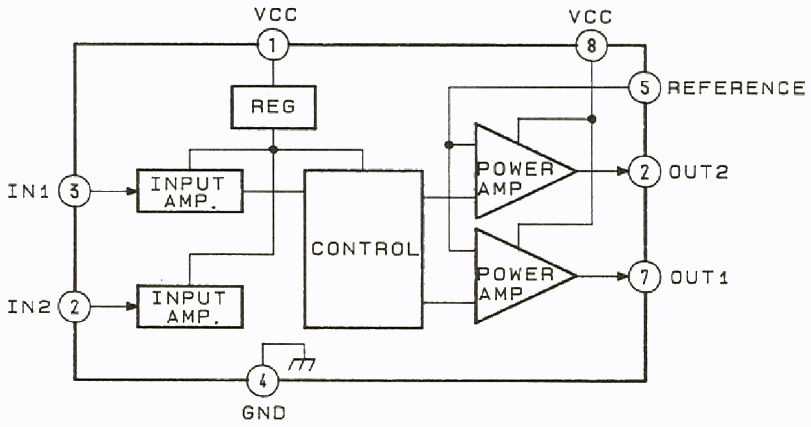
IC201 CXD2500AQ


MIRR
CLKO
XLTO
DATO
CNIN
SEIN
CLOK
VDD
XLAT
DATA
XRST
SENS
MUTE
SQCK
SQSO
EXCK
AUTO SEQUENCER
FOK ①
FSW ②
MON ③
MDP ④
MDS ⑤
LOCK ⑥
NC ⑦
VCOO ⑧
VCOI ⑨
TEST ⑩
PDO ⑪
VSS ⑫
NC ⑬
NC ⑭
NC ⑮
VPCO ⑯
VCKI ⑰
FILO ⑱
FILI ⑲
PCO ⑳
AVSS 21
CLTV 22
AVDD 23
RF 24
CLV
PLL
VCO
ASYMMETRY CORRECTOR
DATA BUS
EFM DEMODU-LATOR
DIGITAL OUT
VARIABLE PITCH CONTROL
CLOCK GENERATOR
ERROR CORRECTOR
RAM
ADDRESS GENERATOR
D/A DATA PROCESSOR
64 SBSO
63 SCOR
62 WFCK
61 EMPH
60 DOUT
59 MD2
58 C16M
57 C4M
56 FSTT
55 XTSL
54 XTAO
53 XTAI
52 VSS
51 APTL
50 APTR
49 DA01
48 DA02
47 DA03
46 DA04
45 DA05
44 DA06
43 DA07
42 DA08
41 DA09
TEST2
TEST3
ASYO
TEST4
NC
PSSL
WDCK
LRCK
VDD
DA16
DA15
DA14
DA13
DA12
DA11
DA10

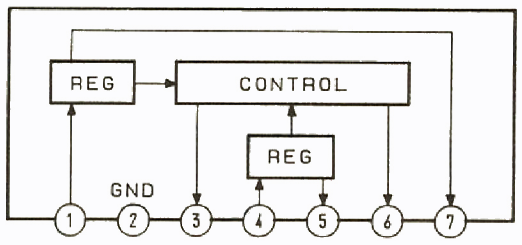
IC202 CXD2560M


FLGL
FLGR
SYSM
MCLK
128FS
INVI
INVO
INVO2
CTL
23
24
2
17
13
14
15
16
6
BCKI 8
DATAI 9
LRCKI 10
INPUT
TIMING
MODE
3 ATT
4 SHIFT
5 LATCH
DATA RAM
COEF ROM
ATT
MPY
ACC
N.S.
O.F.L.
OFFSET
OUTPUT
19 BCKO
20 DL
21 DR
22 LRCKO

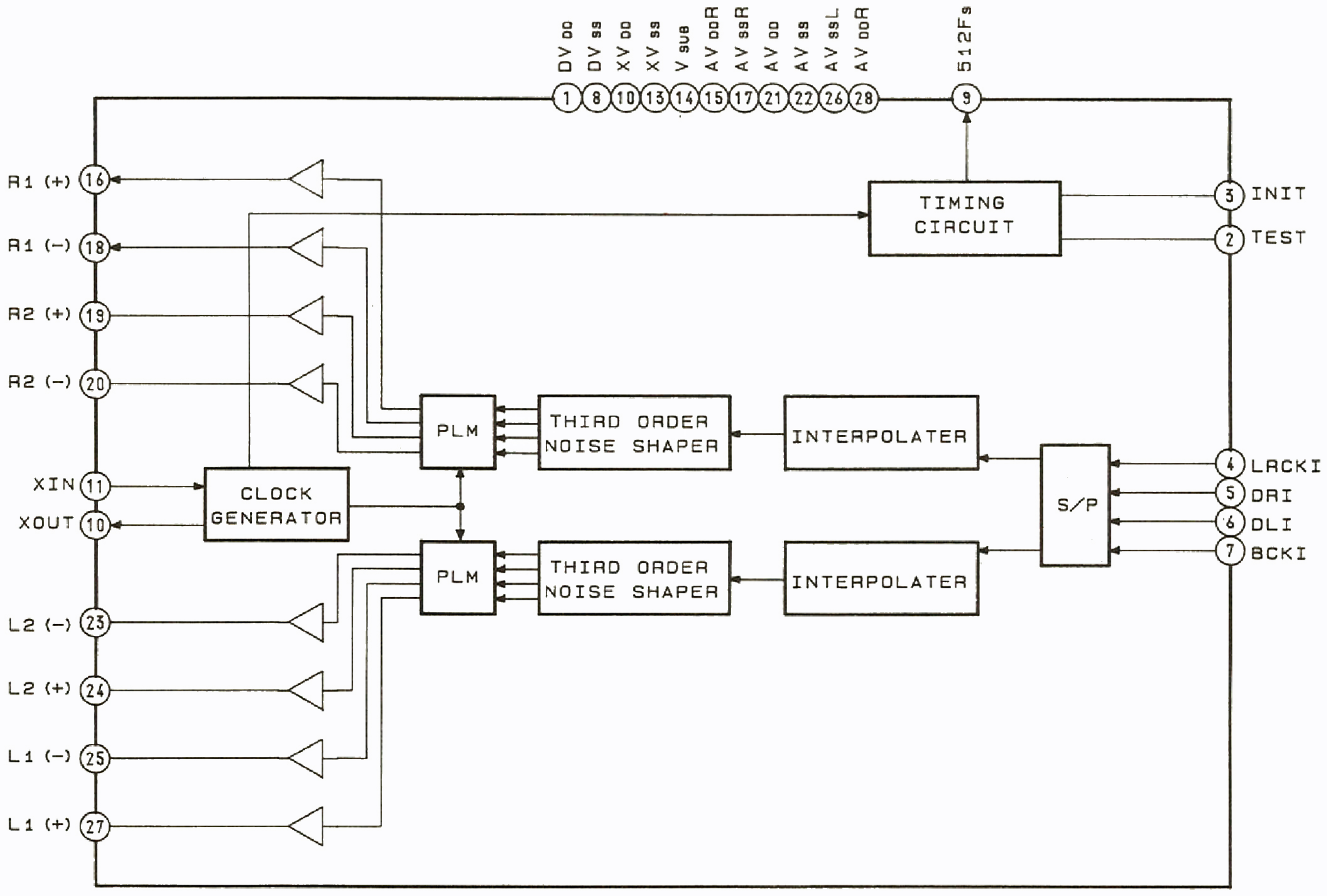
IC206 M54641L


VCC
1
VCC
8
REG
5 REFERENCE
IN1 3
INPUT AMP.
CONTROL
POWER AMP
2 OUT2
IN2 2
INPUT AMP.
POWER AMP
7 OUT1
4
GND

IC701 LA5667


REG
CONTROL
REG
GND
1
2
3
4
5
6
7

IC203 CXD2561BM


DV DD
DV SS
XV DD
XV SS
V SUB
AV DDR
AV SSR
AV DD
AV SS
AV SSL
AV DDR
1
8
10
13
14
15
17
21
22
26
28
512Fs
9
R1 (+) 16
R1 (−) 18
R2 (+) 19
R2 (−) 20
TIMING CIRCUIT
3 INIT
2 TEST
PLM
THIRD ORDER NOISE SHAPER
INTERPOLATER
XIN 11
XOUT 10
CLOCK GENERATOR
S/P
4 LRCKI
5 DRI
6 DLI
7 BCKI
PLM
THIRD ORDER NOISE SHAPER
INTERPOLATER
L2 (−) 23
L2 (+) 24
L1 (−) 25
L1 (+) 27

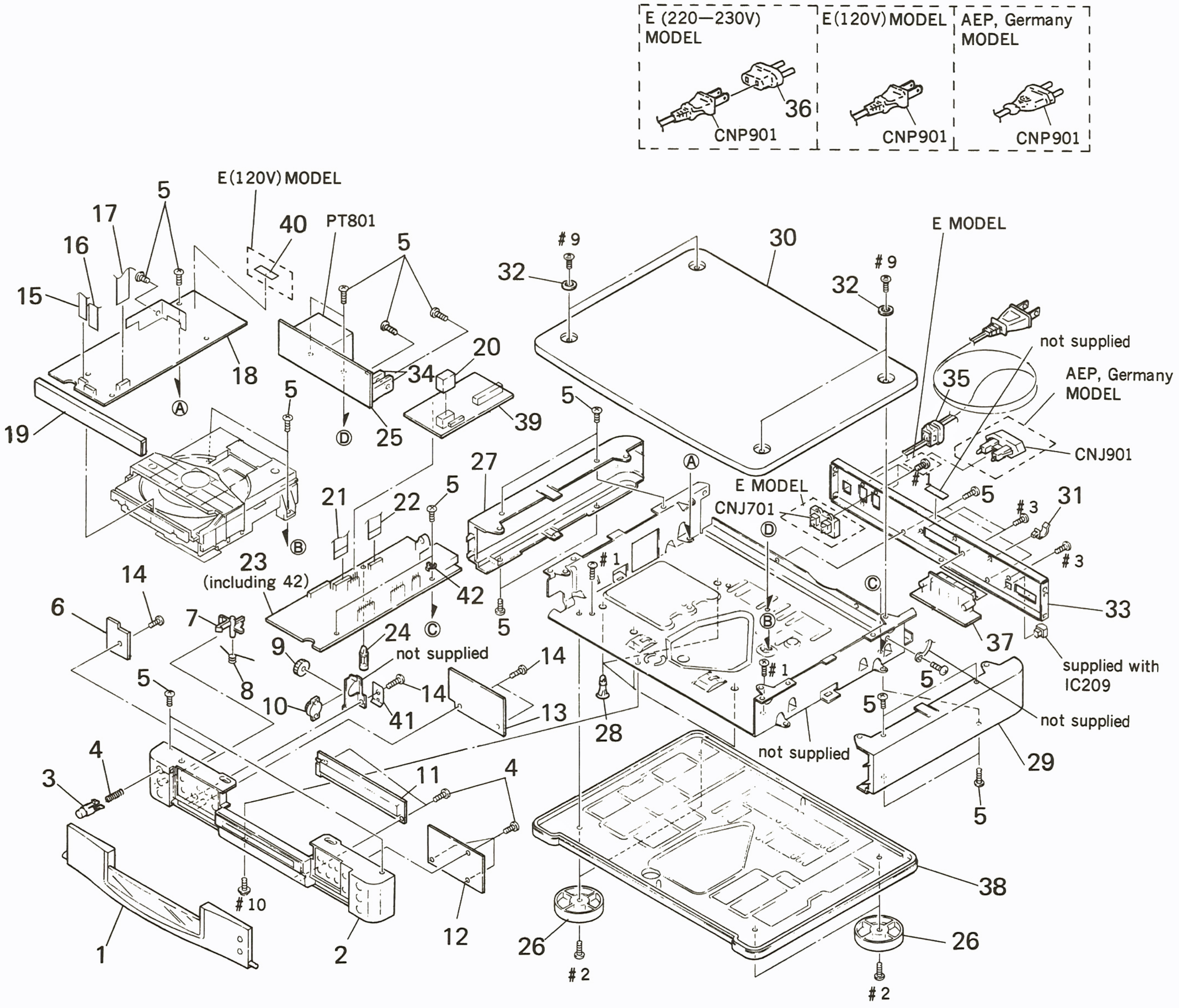
SECTION 4
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ Parts Color ↑ Cabinet's Color
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

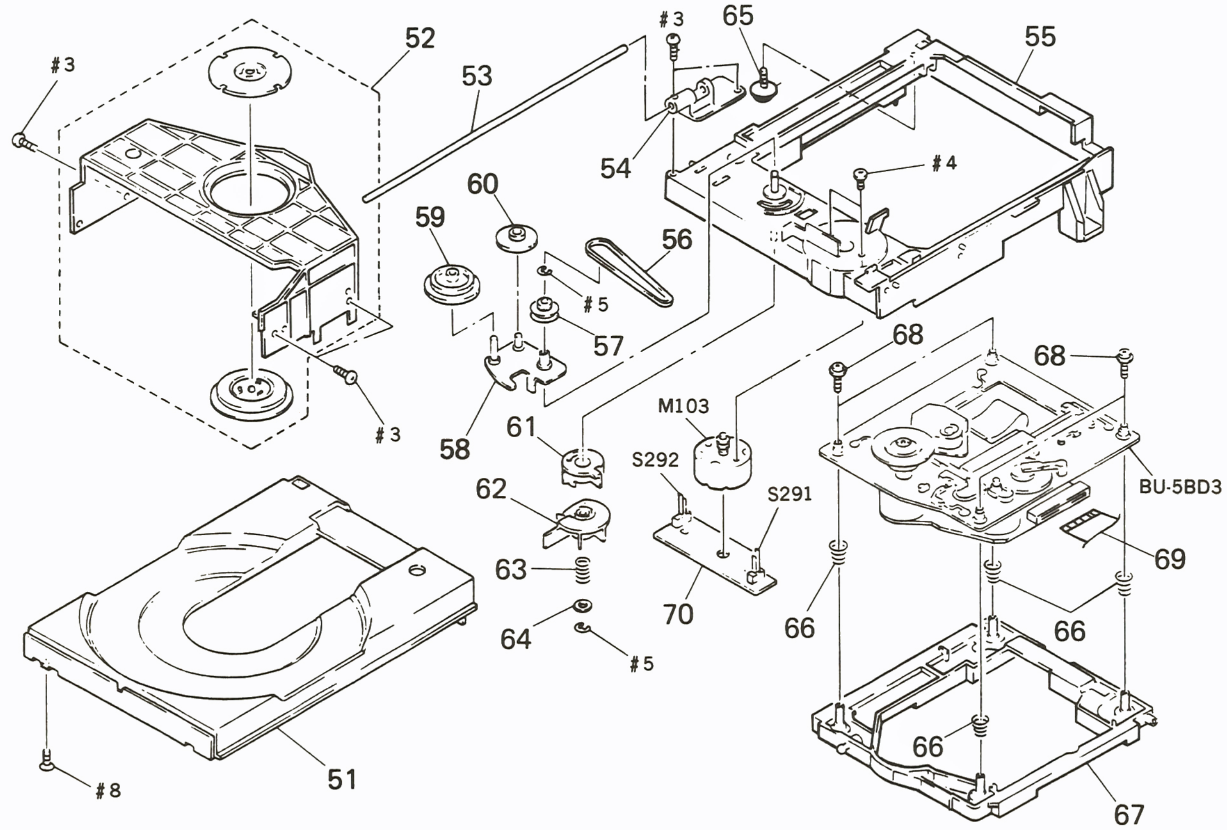
4-1. CHASSIS SECTION


E (220—230V) MODEL
36
CNP901
E(120V) MODEL
CNP901
AEP, Germany MODEL
CNP901
E(120V) MODEL
5
17
16
15
40
PT801
5
18
Ⓐ
19
5
Ⓓ
25
34
20
39
#9
32
30
#9
32
E MODEL
not supplied
35
AEP, Germany MODEL
CNJ901
5
27
Ⓐ
E MODEL
CNJ701
Ⓓ
21
22
5
Ⓑ
23
(including 42)
42
Ⓒ
14
6
7
8
5
9
24
not supplied
10
41
14
14
13
5
#1
Ⓑ
#1
Ⓒ
5
31
#3
#3
33
37
supplied with IC209
5
5
not supplied
28
not supplied
29
5
4
3
11
4
#10
1
2
12
26
#2
38
26
#2

Ref. No.	Part No.	Description	Remark
1	X-4941-995-1	LID (CDP) ASSY	
2	X-4942-727-1	PANEL ASSY, FRONT	
3	4-948-111-01	BUTTON (OPEN)	
4	4-948-750-01	SPRING, COMPRESSION	
5	3-375-580-11	SCREW (NATEC BVTT) (M3X8)	
* 6	1-644-147-11	SYSTEM POWER BOARD	
7	4-948-110-01	HOOK	
8	4-948-112-01	SPRING, TORSION	
9	4-948-109-01	GEAR	
10	3-319-224-01	DAMPER, SMALL	
* 11	1-644-144-11	DISPLAY BOARD	
* 12	1-641-516-13	PANEL (R) BOARD	
* 13	1-644-146-11	PANEL (L) BOARD	
14	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
15	1-575-730-31	WIRE, FLAT TYPE (5 CORE)	
16	1-590-032-31	WIRE, FLAT TYPE (7 CORE)	
17	1-690-588-31	WIRE, FLAT TYPE (9 CORE)	
* 18	A-4347-918-A	ST CONTROL BOARD, COMPLETE (E)	
* 18	A-4347-921-A	ST CONTROL BOARD, COMPLETE (Germany)	
* 18	A-4347-926-A	ST CONTROL BOARD, COMPLETE (AEP)	
19	X-4941-994-1	PANEL ASSY, LOADING	
* 20	3-348-833-01	CUSHION, RUBBER	
21	1-690-590-31	WIRE, FLAT TYPE (13 CORE)	
22	1-690-589-31	WIRE, FLAT TYPE (13 CORE)	
* 23	A-4347-920-A	CD MAIN BOARD, COMPLETE (E)	
* 23	A-4347-925-A	CD MAIN BOARD, COMPLETE (Germany)	
* 23	A-4347-932-A	CD MAIN BOARD, COMPLETE (AEP)	
* 24	4-944-316-21	HOLDER, PC BOARD	
* 25	1-644-145-11	POWER BOARD	
26	4-948-027-01	FOOT (DIA. 50)	
27	4-948-053-01	PLATE (B) (L), SIDE	

Ref. No.	Part No.	Description	Remark
* 28	3-704-198-21	SUPPORT, PC	
29	4-948-054-01	PLATE (B) (R), SIDE	
* 30	4-948-022-21	COVER (UPPER)	
* 31	4-949-235-01	HOOK	
32	4-928-025-51	ESCUTCHEON (TOP)	
* 33	4-947-627-21	PANEL, BACK (AEP)	
* 33	4-947-627-31	PANEL, BACK (Germany)	
* 33	4-947-627-51	PANEL, BACK (E:120V)	
* 33	4-947-627-61	PANEL, BACK (E:220-230V)	
* 34	3-309-144-21	HEAT SINK	
35	3-703-244-11	BUSHING (2104), CORD (AEP, Germany)	
35	3-703-571-00	BUSHING (S) (4516), CORD (E)	
⚠36	1-569-007-11	ADAPTER, CONVERSION 2P (E:220-230V)	
* 37	1-644-148-11	ANTENNA BOARD	
38	4-948-021-01	COVER (LOWER) (TA)	
* 39	A-4303-343-A	TCB001 (TUNER) BOARD, COMPLETE (AEP)	
* 39	A-4303-344-A	TCB001 (TUNER) BOARD, COMPLETE (Germany)	
* 39	A-4303-416-A	TCB001 (TUNER) BOARD, COMPLETE (E)	
40	4-949-520-22	LABEL (B) (T.L), FUSE RATING (E:120V)	
41	4-950-581-01	SPRING, GROUND	
* 42	4-942-204-01	PLATE, GROUND	
⚠CNJ701	1-540-041-11	OUTLET, AC (NONPOLAR) (2P) (E)	
⚠CNJ901	1-526-794-11	OUTLET, AC (AEP, Germany)	
⚠CNP901	1-575-651-11	CORD, POWER (AEP, Germany)	
⚠CNP901	1-575-653-11	CORD, POWER (E)	
⚠PT801	1-450-948-11	TRANSFORMER, POWER (AEP, E:220-230V, Germany)	
⚠PT801	1-450-949-11	TRANSFORMER, POWER (E:120V)	

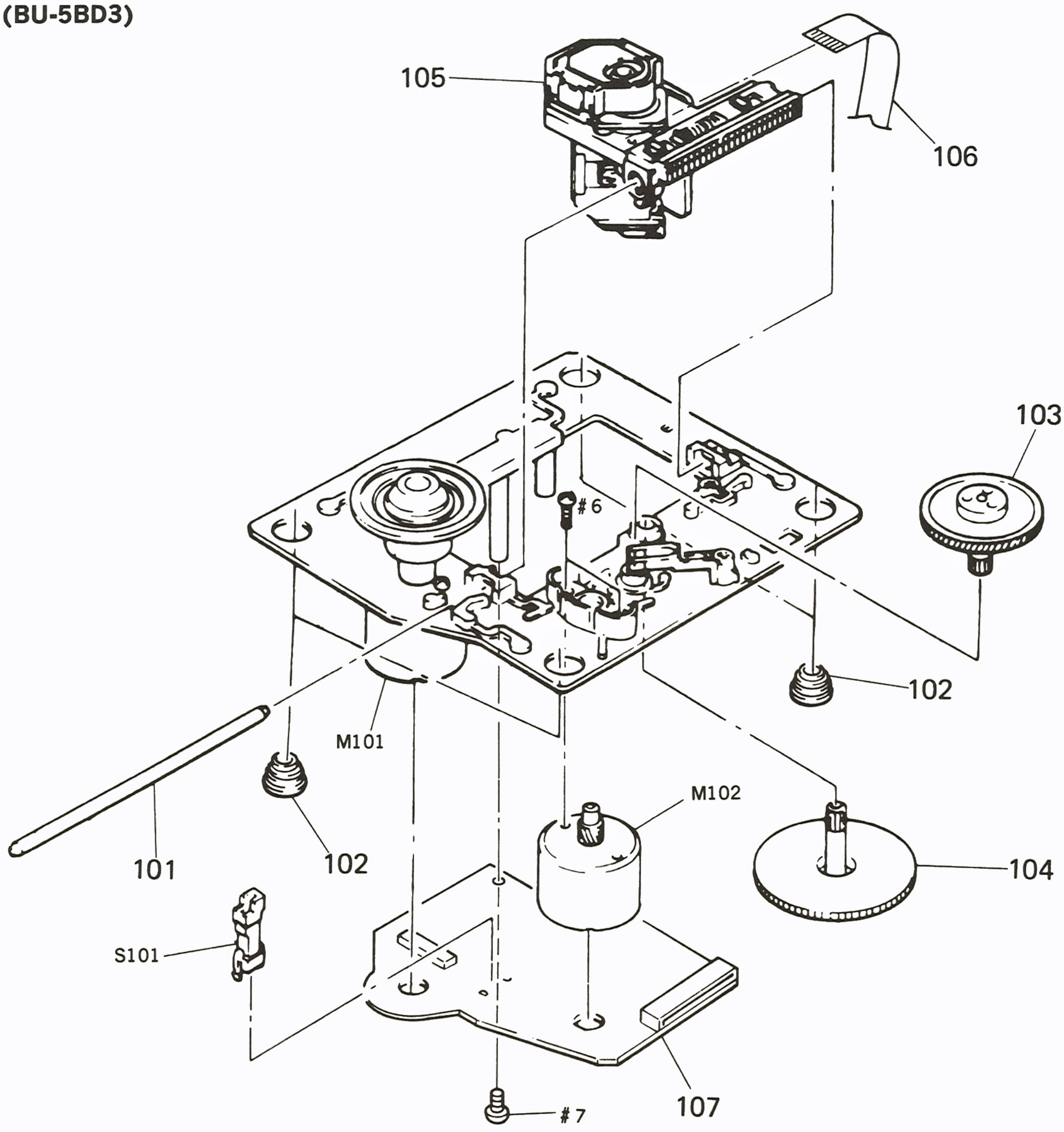
4-2. CD MECHANISM SECTION (CDM13B-5BD3)



Ref. No.	Part No.	Description	Remark
51	4-944-012-01	TABLE, DISC	
52	A-4604-752-A	HOLDER (MG) ASSY	
53	4-929-764-01	SHAFT (TABLE GUIDE)	
54	4-944-006-01	BEARING	
55	X-4941-462-1	CHASSIS (MD) ASSY	
56	4-927-649-01	BELT	
57	4-929-724-01	PULLEY (B)	
58	X-4929-703-1	ARM ASSY, SWING	
59	4-927-620-01	GEAR (P)	
60	4-927-628-01	GEAR (C)	
61	4-929-727-01	CAM (A)	
62	4-929-729-01	CAM (B)	

Ref. No.	Part No.	Description	Remark
63	3-659-338-00	SPRING, COMPRESSION	
64	4-927-654-01	WASHER (LIMITER)	
* 65	4-917-583-21	BRACKET, YOKE	
66	4-917-541-01	SPRING (B)	
67	4-929-747-01	HOLDER (BU)	
68	4-933-134-01	SCREW (+PTPWH M2.6X6)	
69	1-690-732-11	WIRE (FLAT TYPE) (22 CORE) (E:220-230V)	
69	1-690-941-11	WIRE (FLAT TYPE) (AEP, E:120V, Germany)	
* 70	1-634-461-11	LOADING BOARD	
M103	A-4608-362-A	MOTOR (L) ASSY	
S291	1-571-924-11	SWITCH, LEAF (LOAD OUT)	
S292	1-571-924-11	SWITCH, LEAF (LOAD IN)	

4-3. OPTICAL PICK-UP BLOCK SECTION
(BU-5BD3)



Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	4-917-565-01	SHAFT, SLED	
102	4-933-126-01	INSULATOR (A)	
103	4-917-567-01	GEAR (M) (AEP)	
104	4-917-564-01	GEAR (P), FLATNESS	
⚠105	8-848-144-11	DEVICE, OPTICAL KSS-240A	
106	1-575-001-11	WIRE, FLAT TYPE (12 CORE) (AEP)	
* 107	A-4617-371-A	BD BOARD, COMPLETE	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)	

ANTENNA **BD**

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
*	1-644-148-11	ANTENNA BOARD	
		*************	
		< CONNECTOR >	
* CN901	1-564-506-11	PLUG, CONNECTOR 3P	
		< TERMINAL >	
* TM901	1-537-138-31	TERMINAL BOARD (ANT)(AEP, Germany)	
TM901	1-537-238-21	TERMINAL BOARD (E)	

****

Ref. No.	Part No.	Description	Remark
*	A-4617-371-A	BD BOARD, COMPLETE	
		*****************	
		< CAPACITOR >	
C101	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C102	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C103	1-126-163-11	ELECT 4.7uF 20% 50V	
C104	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C105	1-126-154-11	ELECT 47uF 20% 6.3V	
C106	1-126-154-11	ELECT 47uF 20% 6.3V	
C107	1-126-154-11	ELECT 47uF 20% 6.3V	
C108	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C109	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C110	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C111	1-131-367-00	TANTALUM 22uF 10% 20V	
C112	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C113	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C114	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C115	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C116	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C117	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C118	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C119	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C120	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C151	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C152	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C153	1-163-006-11	CERAMIC CHIP 560PF 10% 50V	
C154	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C155	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C171	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C172	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C173	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C174	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >	
CN101	1-568-796-11	SOCKET, CONNECTOR 22P	
CN102	1-568-795-11	SOCKET, CONNECTOR 12P	
		< IC >	
IC101	8-752-053-73	IC CXA1372AQ	
IC102	8-759-822-36	IC LA6532M	
		< JUMPER >	
J101	1-216-295-00	METAL CHIP 0 5% 1/10W	
J102	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< TRANSISTOR >	
Q101	8-729-901-01	TRANSISTOR DTC144EK	
		< RESISTOR >	
R101	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R102	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R103	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R104	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R105	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R106	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R107	1-216-114-00	METAL GLAZE 510K 5% 1/10W	
R108	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R109	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R110	1-216-049-00	METAL CHIP 1K 5% 1/10W	

Ref.No.	Part No.	Description			Remark
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-079-00	METAL CHIP	18K	5%	1/10W
R158	1-216-079-00	METAL CHIP	18K	5%	1/10W
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W

< VARIABLE RESISTOR >

Ref.No.	Part No.	Description
RV101	1-241-630-11	RES, ADJ, CARBON 10K (TRACKING GAIN)
RV102	1-241-630-11	RES, ADJ, CARBON 10K (FOCUS GAIN)

< SWITCH >

Ref.No.	Part No.	Description
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)

****

Ref.No.	Part No.	Description
*	A-4347-920-A	CD MAIN BOARD, COMPLETE (E)
*	A-4347-925-A	CD MAIN BOARD, COMPLETE (Germany)
*	A-4347-932-A	CD MAIN BOARD, COMPLETE (AEP)

****

Ref.No.	Part No.	Description
	4-870-539-00	PLATE, GROUND (AEP)
*	4-942-204-01	PLATE, GROUND

< CAPACITOR >

Ref.No.	Part No.	Description			Remark
C201	1-130-491-00	MYLAR	0.047uF	5%	50V
C202	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C204	1-161-494-00	CERAMIC	0.022uF		25V
C206	1-162-306-11	CERAMIC	0.01uF	20%	16V
C207	1-124-465-00	ELECT	0.47uF	20%	50V
C208	1-161-494-00	CERAMIC	0.022uF		25V
C209	1-124-589-11	ELECT	47uF	20%	16V
C210	1-164-159-11	CERAMIC	0.1uF		50V
C211	1-164-159-11	CERAMIC	0.1uF		50V
C212	1-162-208-31	CERAMIC	24PF	5%	50V
C213	1-162-205-31	CERAMIC	18PF	5%	50V
C214	1-164-159-11	CERAMIC	0.1uF		50V
C215	1-124-589-11	ELECT	47uF	20%	16V
C218	1-164-159-11	CERAMIC	0.1uF		50V
C219	1-124-589-11	ELECT	47uF	20%	16V
C220	1-164-159-11	CERAMIC	0.1uF		50V
C221	1-162-196-31	CERAMIC	5.6PF	10%	50V
C222	1-162-196-31	CERAMIC	5.6PF	10%	50V
C223	1-161-494-00	CERAMIC	0.022uF		25V
C224	1-124-589-11	ELECT	47uF	20%	16V
C225	1-161-494-00	CERAMIC	0.022uF		25V
C226	1-162-289-31	CERAMIC	390PF	10%	50V
C227	1-124-589-11	ELECT	47uF	20%	16V
C228	1-161-494-00	CERAMIC	0.022uF		25V
C229	1-162-289-31	CERAMIC	390PF	10%	50V
C230	1-124-589-11	ELECT	47uF	20%	16V
C231	1-161-494-00	CERAMIC	0.022uF		25V
C235	1-162-286-31	CERAMIC	220PF	10%	50V
C236	1-162-286-31	CERAMIC	220PF	10%	50V
C237	1-162-286-31	CERAMIC	220PF	10%	50V
C238	1-162-286-31	CERAMIC	220PF	10%	50V
C239	1-106-359-00	MYLAR	4700PF	5%	200V
C240	1-106-359-00	MYLAR	4700PF	5%	200V
C241	1-130-472-00	MYLAR	0.0012uF	5%	50V
C242	1-130-472-00	MYLAR	0.0012uF	5%	50V
C243	1-124-916-11	ELECT	22uF	20%	63V
C244	1-124-916-11	ELECT	22uF	20%	63V
C245	1-164-159-11	CERAMIC	0.1uF		50V
C246	1-164-159-11	CERAMIC	0.1uF		50V
C247	1-106-347-00	MYLAR	1500PF	5%	200V
C248	1-106-347-00	MYLAR	1500PF	5%	200V
C252	1-162-306-11	CERAMIC	0.01uF	20%	16V
C253	1-124-997-11	ELECT	470uF	20%	10V
C254	1-161-494-00	CERAMIC	0.022uF		25V
C255	1-126-059-11	ELECT	10uF	20%	50V
C256	1-126-023-11	ELECT	100uF	20%	16V
C260	1-126-022-11	ELECT	47uF	20%	16V
C261	1-126-022-11	ELECT	47uF	20%	16V
C263	1-162-306-11	CERAMIC	0.01uF	20%	16V
C301	1-162-306-11	CERAMIC	0.01uF	20%	16V
C302	1-126-059-11	ELECT	10uF	20%	50V
C304	1-162-306-11	CERAMIC	0.01uF	20%	16V

< CONNECTOR >

Ref.No.	Part No.	Description
* CN201	1-568-822-11	SOCKET, CONNECTOR 22P
* CN202	1-564-339-00	PIN, CONNECTOR 5P
* CN203	1-564-509-11	PLUG, CONNECTOR 6P
* CN204	1-691-007-11	CONNECTOR (PC BOARD) (PLUG) 4P
* CN205	1-691-007-11	CONNECTOR (PC BOARD) (PLUG) 4P
* CN206	1-568-832-11	SOCKET, CONNECTOR 13P
* CN207	1-691-007-11	CONNECTOR (PC BOARD) (PLUG) 4P
* CN208	1-691-007-11	CONNECTOR (PC BOARD) (PLUG) 4P

MAIN

Ref. No.	Part No.	Description	Remark
* CN209	1-691-004-11	PLUG, CONNECTOR (PC BOARD) 13P	
* CN210	1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P	
* CN211	1-564-506-11	PLUG, CONNECTOR 3P	
* CN301	1-568-832-11	SOCKET, CONNECTOR 13P	
* CN302	1-564-339-00	PIN, CONNECTOR 5P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D202	8-719-210-21	DIODE 11EQS04	
D203	8-719-010-26	DIODE UZ-3.9BSB	
D204	8-719-987-63	DIODE 1N4148M	
D205	8-719-000-78	DIODE UZL-7L2	
D301	8-719-987-63	DIODE 1N4148M	
D302	8-719-987-63	DIODE 1N4148M	

< IC >

Ref. No.	Part No.	Description	Remark
IC201	8-752-337-26	IC CXD2500AQ	
IC202	8-752-342-65	IC CXD2560M	
IC203	8-752-351-19	IC CXD2561BM	
IC204	8-759-634-51	IC M5218AP	
IC205	8-759-634-51	IC M5218AP	
IC206	8-759-633-65	IC M54641L	
IC207	8-759-634-51	IC M5218AP	
IC208	8-759-000-49	IC MC14066BCP	
IC209	8-749-923-04	IC TOTX178 (DIGITAL OUTPUT)	
IC301	8-759-061-80	IC uPD75116CW-210	

< COIL >

Ref. No.	Part No.	Description	Remark
L201	1-408-403-00	INDUCTOR 3.3uH	
L301	1-410-521-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q205	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q206	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q207	8-729-900-65	TRANSISTOR DTA144ES	
Q208	8-729-900-65	TRANSISTOR DTA144ES	
Q210	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q211	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q212	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q301	8-729-620-05	TRANSISTOR 2SC2603-EF	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R201	1-249-423-11	CARBON 3.3K 5% 1/4W	
R202	1-249-429-11	CARBON 10K 5% 1/4W	
R203	1-249-423-11	CARBON 3.3K 5% 1/4W	
R205	1-249-429-11	CARBON 10K 5% 1/4W	
R206	1-249-441-11	CARBON 100K 5% 1/4W	
R207	1-249-417-11	CARBON 1K 5% 1/4W	
R208	1-249-417-11	CARBON 1K 5% 1/4W	
R209	1-249-420-11	CARBON 1.8K 5% 1/4W	
R211	1-249-423-11	CARBON 3.3K 5% 1/4W	
R212	1-249-417-11	CARBON 1K 5% 1/4W	
R213	1-249-409-11	CARBON 220 5% 1/4W	
R214	1-249-409-11	CARBON 220 5% 1/4W	
R215	1-249-417-11	CARBON 1K 5% 1/4W	
R216	1-249-417-11	CARBON 1K 5% 1/4W	
R217	1-249-417-11	CARBON 1K 5% 1/4W	
R218	1-249-417-11	CARBON 1K 5% 1/4W	
R219	1-249-417-11	CARBON 1K 5% 1/4W	
R221	1-249-393-11	CARBON 10 5% 1/4W	
R222	1-247-903-00	CARBON 1M 5% 1/4W	(E, Germany)
R223	1-249-428-11	CARBON 8.2K 5% 1/4W	
R224	1-249-428-11	CARBON 8.2K 5% 1/4W	
R225	1-249-428-11	CARBON 8.2K 5% 1/4W	
R226	1-249-428-11	CARBON 8.2K 5% 1/4W	
R227	1-249-428-11	CARBON 8.2K 5% 1/4W	
R228	1-249-428-11	CARBON 8.2K 5% 1/4W	
R229	1-249-428-11	CARBON 8.2K 5% 1/4W	
R230	1-249-428-11	CARBON 8.2K 5% 1/4W	
R231	1-249-411-11	CARBON 330 5% 1/4W	
R233	1-249-423-11	CARBON 3.3K 5% 1/4W	
R234	1-249-423-11	CARBON 3.3K 5% 1/4W	
R235	1-249-423-11	CARBON 3.3K 5% 1/4W	
R236	1-249-423-11	CARBON 3.3K 5% 1/4W	
R237	1-249-429-11	CARBON 10K 5% 1/4W	
R238	1-249-429-11	CARBON 10K 5% 1/4W	
R239	1-249-429-11	CARBON 10K 5% 1/4W	
R240	1-249-429-11	CARBON 10K 5% 1/4W	
R241	1-249-419-11	CARBON 1.5K 5% 1/4W	
R242	1-249-419-11	CARBON 1.5K 5% 1/4W	
R243	1-249-419-11	CARBON 1.5K 5% 1/4W	
R244	1-249-419-11	CARBON 1.5K 5% 1/4W	
R245	1-247-887-00	CARBON 220K 5% 1/4W	
R246	1-247-887-00	CARBON 220K 5% 1/4W	
R247	1-249-413-11	CARBON 470 5% 1/4W	
R248	1-249-413-11	CARBON 470 5% 1/4W	
R254	1-249-393-11	CARBON 10 5% 1/4W	
R255	1-249-393-11	CARBON 10 5% 1/4W	
R256	1-249-413-11	CARBON 470 5% 1/4W	
R257	1-249-413-11	CARBON 470 5% 1/4W	
R258	1-249-425-11	CARBON 4.7K 5% 1/4W	
R259	1-249-425-11	CARBON 4.7K 5% 1/4W	
R261	1-249-441-11	CARBON 100K 5% 1/4W	
R262	1-249-441-11	CARBON 100K 5% 1/4W	
R271	1-249-413-11	CARBON 470 5% 1/4W	
R272	1-249-425-11	CARBON 4.7K 5% 1/4W	
R273	1-249-413-11	CARBON 470 5% 1/4W	
R274	1-249-425-11	CARBON 4.7K 5% 1/4W	
R275	1-249-410-11	CARBON 270 5% 1/4W	
R276	1-249-429-11	CARBON 10K 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R277	1-249-429-11	CARBON 10K 5% 1/4W	
R280	1-249-429-11	CARBON 10K 5% 1/4W	
R281	1-249-429-11	CARBON 10K 5% 1/4W	
R301	1-249-429-11	CARBON 10K 5% 1/4W	
R302	1-249-425-11	CARBON 4.7K 5% 1/4W	
R303	1-249-429-11	CARBON 10K 5% 1/4W	
R304	1-249-393-11	CARBON 10 5% 1/4W	
R307	1-249-437-11	CARBON 47K 5% 1/4W	
R308	1-249-429-11	CARBON 10K 5% 1/4W	
R309	1-249-429-11	CARBON 10K 5% 1/4W	
R310	1-249-429-11	CARBON 10K 5% 1/4W	
R311	1-249-429-11	CARBON 10K 5% 1/4W	
R312	1-249-429-11	CARBON 10K 5% 1/4W	
		< VIBRATOR >	
X201	1-567-965-11	VIBRATOR, CRYSTAL (22.5792MHz)	
X301	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	
**			
*	1-644-144-11	DISPLAY BOARD *************	
		< CAPACITOR >	
C501	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C502	1-164-812-11	CERAMIC 68PF 5% 50V	
C503	1-161-379-00	CERAMIC 0.01uF 20% 25V	
		< CONNECTOR >	
* CN501	1-568-852-11	SOCKET, CONNECTOR 9P	
		< INDICATOR TUBE >	
FL501	1-519-700-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC501	8-759-045-48	IC M66004MIFP	
		< RESISTOR >	
R501	1-249-432-11	CARBON 18K 5% 1/4W	
**			
*	1-634-461-11	LOADING BOARD *************	
		< CONNECTOR >	
* CN291	1-564-498-11	PIN, CONNECTOR 5P	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S291	1-571-924-11	SWITCH, LEAF (LOAD OUT)	
S292	1-571-924-11	SWITCH, LEAF (LOAD IN)	
**			
*	1-644-146-11	PANEL (L) BOARD ***************	
		< CONNECTOR >	
* CN602	1-568-850-11	SOCKET, CONNECTOR 7P	
		< SWITCH >	
S603	1-554-303-21	SWITCH, TACTILE (TIMER SET 1)	
S604	1-554-303-21	SWITCH, TACTILE (TIMER SET 2)	
S605	1-554-303-21	SWITCH, TACTILE (TIMER SET 3(REC))	
S606	1-554-303-21	SWITCH, TACTILE (CLOCK)	
S607	1-554-303-21	SWITCH, TACTILE (CONTROL/CHECK/CLEAR)	
S608	1-554-303-21	SWITCH, TACTILE (TIME/DAY -)	
S609	1-554-303-21	SWITCH, TACTILE (TIME/DAY +)	
S610	1-554-303-21	SWITCH, TACTILE (NEXT)	
S611	1-554-303-21	SWITCH, TACTILE (SLEEP)	
**			
*	1-641-516-13	PANEL (R) BOARD ***************	
		< CONNECTOR >	
CN603	1-564-501-11	PIN, CONNECTOR 8P	
* CN604	1-564-498-11	PIN, CONNECTOR 5P	
		< DIODE >	
D601	8-719-301-49	LED SEL2810A (▶II)	
D602	8-719-301-37	LED SEL2210S-CD (CONTINUE)	
D603	8-719-301-37	LED SEL2210S-CD (SHUFLE)	
D604	8-719-301-37	LED SEL2210S-CD (PROGRAM)	
		< RESISTOR >	
R601	1-249-409-11	CARBON 220 5% 1/4W	
R602	1-249-412-11	CARBON 390 5% 1/4W	
R603	1-249-412-11	CARBON 390 5% 1/4W	
R604	1-249-412-11	CARBON 390 5% 1/4W	
		< SWITCH >	
S612	1-554-303-21	SWITCH, TACTILE (▶II)	
S613	1-554-303-21	SWITCH, TACTILE (TUNING/PRESET)	
S614	1-554-303-21	SWITCH, TACTILE (◁◁ ⏮ /-)	
S615	1-554-303-21	SWITCH, TACTILE (▷▷ ⏭ /+)	

PANEL (R) POWER ST CONTROL

Ref. No.	Part No.	Description	Remark
S616	1-554-303-21	SWITCH, TACTILE (TIME SHIFT)	
S617	1-554-303-21	SWITCH, TACTILE (CHECK/MEMORY)	
S618	1-554-303-21	SWITCH, TACTILE (CLEAR/CHARACTER)	
S619	1-554-303-21	SWITCH, TACTILE (STEREO/MONO ENTER)	
S620	1-554-303-21	SWITCH, TACTILE (⏏)	
S621	1-554-303-21	SWITCH, TACTILE (CONTINUE)	
S622	1-554-303-21	SWITCH, TACTILE (SHUFFLE)	
S623	1-554-303-21	SWITCH, TACTILE (PROGRAM)	
**			
*	1-644-145-11	POWER BOARD ***********	
*	3-309-144-21	HEAT SINK	
		< CAPACITOR >	
C801	1-126-017-11	ELECT 6800uF 20% 16V	
C802	1-126-024-11	ELECT 220uF 20% 16V	
C803	1-126-024-11	ELECT 220uF 20% 16V	
C804	1-126-027-11	ELECT 1000uF 20% 25V	
C805	1-126-024-11	ELECT 220uF 20% 16V	
		< CONNECTOR >	
* CN801	1-564-321-00	PIN, CONNECTOR 2P	
* CN802	1-564-508-11	PLUG, CONNECTOR 5P	
* CN803	1-564-509-11	PLUG, CONNECTOR 6P	
		< DIODE >	
D801	8-719-200-77	DIODE 10E2N	
D802	8-719-200-77	DIODE 10E2N	
D803	8-719-200-77	DIODE 10E2N	
D804	8-719-200-77	DIODE 10E2N	
		< IC >	
IC801	8-759-231-53	IC TA7805S	
IC802	8-759-605-00	IC M5F78M07L	
IC803	8-759-982-52	IC RC79M05FA	
**			
*	A-4347-918-A	ST CONTROL BOARD, COMPLETE (E)	
*	A-4347-921-A	ST CONTROL BOARD, COMPLETE (Germany)	
*	A-4347-926-A	ST CONTROL BOARD, COMPLETE (AEP) ************************************	
*	4-933-656-01	PLATE (ANT), GROUND	
*	4-948-457-01	HOLDER (CD), FL	

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C401	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C402	1-162-206-31	CERAMIC 20PF 5% 50V	
C403	1-102-961-00	CERAMIC 27PF 5% 50V	
C404	1-164-159-11	CERAMIC 0.1uF 50V	
C405	1-126-162-11	ELECT 3.3uF 20% 50V	
C406	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C407	1-125-486-11	DOUBLE LAYERS 0.22F 5.5V	
C408	1-126-059-11	ELECT 10uF 20% 50V	
C409	1-164-159-11	CERAMIC 0.1uF 50V	
C410	1-161-375-00	CERAMIC 0.0022uF 20% 50V	
C701	1-161-744-00	CERAMIC 0.01uF 400V	
C703	1-164-096-11	CERAMIC 0.01uF 50V	
C704	1-126-041-11	ELECT 2200uF 20% 35V	
C705	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C706	1-126-022-11	ELECT 47uF 20% 16V	
C707	1-126-022-11	ELECT 47uF 20% 16V	
C708	1-126-301-11	ELECT 1uF 20% 50V	
C710	1-126-161-11	ELECT 2.2uF 20% 50V	
C715	1-124-918-11	ELECT 47uF 20% 63V	
C716	1-124-918-11	ELECT 47uF 20% 63V	
C717	1-124-910-11	ELECT 47uF 20% 50V	
C718	1-126-059-11	ELECT 10uF 20% 50V	
		< CONNECTOR >	
* CN401	1-568-824-11	SOCKET, CONNECTOR 5P	
* CN402	1-568-826-11	SOCKET, CONNECTOR 7P	
* CN403	1-564-342-11	PIN, CONNECTOR 8P	
* CN404	1-568-828-11	SOCKET, CONNECTOR 9P	
* CN405	1-568-832-11	SOCKET, CONNECTOR 13P	
* CN406	1-568-832-11	SOCKET, CONNECTOR 13P	
* CN701	1-564-321-00	PIN, CONNECTOR 2P	
* CN703	1-564-508-11	PLUG, CONNECTOR 5P	
		< DIODE >	
D401	8-719-987-63	DIODE 1N4148M	
D402	8-719-987-63	DIODE 1N4148M	
D403	8-719-987-63	DIODE 1N4148M	
D404	8-719-987-63	DIODE 1N4148M	
D405	8-719-987-63	DIODE 1N4148M	
D406	8-719-987-63	DIODE 1N4148M	
D407	8-719-987-63	DIODE 1N4148M	
D408	8-719-987-63	DIODE 1N4148M	
D409	8-719-987-63	DIODE 1N4148M	
D411	8-719-987-63	DIODE 1N4148M (E)	
D413	8-719-987-63	DIODE 1N4148M	
D701	8-719-987-63	DIODE 1N4148M	

Ref. No.	Part No.	Description	Remark
D702	8-719-200-77	DIODE 10E2N	
D706	8-719-200-77	DIODE 10E2N	
D707	8-719-200-77	DIODE 10E2N	
D708	8-719-014-66	DIODE UZP-5.6B	

< FUSE >

Ref. No.	Part No.	Description	Remark
⚠F701	1-532-237-00	FUSE, TIME-LAG (BET) (3.15A) (AEP, E:220-230V, Germany)	
⚠F701	1-532-325-00	FUSE, TIME-LAG (6.3A) (E:120V)	

< HOLDER >

Ref. No.	Part No.	Description	Remark
* FH701	1-533-213-31	HOLDER, FUSE	
* FH702	1-533-213-31	HOLDER, FUSE	

< IC >

Ref. No.	Part No.	Description	Remark
IC401	8-759-073-73	IC uPD75217CW-150	
IC701	8-759-820-09	IC LA5667	
IC703	8-759-633-42	IC M5293L	

< COIL >

Ref. No.	Part No.	Description	Remark
L401	1-410-521-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q401	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q402	8-729-900-80	TRANSISTOR DTC114ES	
Q701	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q702	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q703	8-729-620-05	TRANSISTOR 2SC2603-EF	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R401	1-249-429-11	CARBON 10K 5% 1/4W	
R402	1-249-429-11	CARBON 10K 5% 1/4W	
R403	1-249-433-11	CARBON 22K 5% 1/4W	
R404	1-249-433-11	CARBON 22K 5% 1/4W	
R405	1-249-429-11	CARBON 10K 5% 1/4W	
R406	1-249-429-11	CARBON 10K 5% 1/4W	
R407	1-249-429-11	CARBON 10K 5% 1/4W	
R408	1-249-429-11	CARBON 10K 5% 1/4W	
R409	1-249-429-11	CARBON 10K 5% 1/4W	
R410	1-249-433-11	CARBON 22K 5% 1/4W	
R411	1-249-433-11	CARBON 22K 5% 1/4W	
R412	1-249-429-11	CARBON 10K 5% 1/4W	
R413	1-249-429-11	CARBON 10K 5% 1/4W	
R414	1-249-429-11	CARBON 10K 5% 1/4W	
R415	1-249-429-11	CARBON 10K 5% 1/4W	
R416	1-247-903-00	CARBON 1M 5% 1/4W	
R417	1-247-903-00	CARBON 1M 5% 1/4W	
R418	1-249-429-11	CARBON 10K 5% 1/4W	
R419	1-249-405-11	CARBON 100 5% 1/4W	
R421	1-249-393-11	CARBON 10 5% 1/4W	
R422	1-249-421-11	CARBON 2.2K 5% 1/4W	
R423	1-249-429-11	CARBON 10K 5% 1/4W	
R424	1-249-425-11	CARBON 4.7K 5% 1/4W	
R425	1-249-429-11	CARBON 10K 5% 1/4W	
R426	1-249-413-11	CARBON 470 5% 1/4W	
R427	1-249-413-11	CARBON 470 5% 1/4W	
R428	1-249-413-11	CARBON 470 5% 1/4W	
R429	1-249-413-11	CARBON 470 5% 1/4W	
R430	1-249-429-11	CARBON 10K 5% 1/4W	
R701	1-247-743-11	CARBON 220 5% 1/2W	
R702	1-249-429-11	CARBON 10K 5% 1/4W	
R704	1-249-417-11	CARBON 1K 5% 1/4W	
R705	1-249-433-11	CARBON 22K 5% 1/4W	
R706	1-249-413-11	CARBON 470 5% 1/4W	
R707	1-249-425-11	CARBON 4.7K 5% 1/4W	
R710	1-249-437-11	CARBON 47K 5% 1/4W	
R711	1-249-429-11	CARBON 10K 5% 1/4W	
R712	1-249-433-11	CARBON 22K 5% 1/4W	

< RELAY >

Ref. No.	Part No.	Description	Remark
RY701	1-515-720-11	RELAY	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X401	1-577-621-11	VIBRATOR, CRYSTAL (4.19MHz)	

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* 1-644-147-11 SYSTEM POWER BOARD

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< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN601	1-568-848-11	SOCKET, CONNECTOR 5P	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S601	1-554-303-21	SWITCH, TACTILE (SYSTEM POWER)	
S602	1-554-303-21	SWITCH, TACTILE (BAND)	

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* A-4303-343-A TCB001 (TUNER) BOARD, COMPLETE (AEP)
* A-4303-344-A TCB001 (TUNER) BOARD, COMPLETE (Germany)
* A-4303-416-A TCB001 (TUNER) BOARD, COMPLETE (E)

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< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C1	1-124-120-11	ELECT 220uF 20% 25V	
C2	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C3	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C5	1-163-031-11	CERAMIC CHIP 0.01uF 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

TCB001

Ref. No.	Part No.	Description			Remark
C6	1-163-038-00	CERAMIC CHIP	0.1uF		25V (AEP, Germany)
C8	1-163-031-11	CERAMIC CHIP	0.01uF		50V (AEP, Germany)
C9	1-163-012-00	CERAMIC CHIP	1800PF		(AEP, Germany)
C10	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V (AEP, Germany)
C21	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C22	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C23	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C24	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C25	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C26	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C27	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C29	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C31	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C32	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C33	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C34	1-164-005-11	CERAMIC CHIP	0.47uF		25V (AEP, Germany)
C35	1-163-033-00	CERAMIC CHIP	0.022uF		50V (AEP, Germany)
C36	1-163-033-00	CERAMIC CHIP	0.022uF		50V (AEP, Germany)
C51	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C52	1-126-162-11	ELECT	3.3uF	20%	50V
C53	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C54	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C55	1-163-105-00	CERAMIC CHIP	33PF	5%	50V (AEP, E)
C55	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (Germany)
C56	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (Germany)
C57	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C58	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C59	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C60	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C61	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C62	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C63	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C64	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C65	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C66	1-164-346-11	CERAMIC CHIP	1.0uF		16V
C69	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C70	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C71	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C72	1-124-120-11	ELECT	220uF	20%	25V
C73	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C74	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C75	1-126-157-11	ELECT	10uF	20%	16V
C76	1-126-101-11	ELECT	100uF	20%	16V
C79	1-126-157-11	ELECT	10uF	20%	16V
C80	1-124-472-11	ELECT	470uF	20%	10V
C81	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C82	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C83	1-163-031-11	CERAMIC CHIP	0.01uF		50V (Germany)

< FILTER >

Ref. No.	Part No.	Description
CF1	1-567-389-11	FILTER, CERAMIC (E)
CF1	1-579-675-11	FILTER, CERAMIC (AEP, Germany)
CF2	1-579-675-11	FILTER, CERAMIC (Germany)
CF51	1-567-389-11	FILTER, CERAMIC (E)
CF51	1-579-675-11	FILTER, CERAMIC (AEP, Germany)

< CONNECTOR >

Ref. No.	Part No.	Description
CN1	1-573-105-11	CONNECTOR, PC BOARD (RECEPTACLE)
CN2	1-573-105-11	CONNECTOR, PC BOARD (RECEPTACLE)
CN3	1-573-105-11	CONNECTOR, PC BOARD (RECEPTACLE)
CN4	1-573-105-11	CONNECTOR, PC BOARD (RECEPTACLE)
CN5	1-573-105-11	CONNECTOR, PC BOARD (RECEPTACLE)

< DIODE >

Ref. No.	Part No.	Description
D21	8-719-422-46	DIODE MA8056-TX
D51	8-719-016-74	DIODE 1SS352

< FRONTEND >

Ref. No.	Part No.	Description
FE1	1-463-957-11	FRONTEND (FM 4 GANG) (Germany)
FE1	1-465-673-11	FRONTEND (2 BAND) (AEP, E)
FE2	1-239-030-11	ENCAPSULATED COMPONENT (MW) (AEP, Germany)
FE2	1-239-031-11	ENCAPSULATED COMPONENT (E)
FE3	1-239-049-11	ENCAPSULATED COMPONENT (LW) (AEP, Germany)

< FILTER >

Ref. No.	Part No.	Description
FL51	1-239-029-11	ENCAPSULATED COMPONENT (Germany)

< IC >

Ref. No.	Part No.	Description
IC21	8-759-821-43	IC LC7218M
IC51	8-759-823-68	IC LA1851NM

Ref. No.	Part No.	Description	Remark
		< IFT >	
IFT51	1-404-954-11	TRANSFORMER, DISCRIMINATOR	
IFT52	1-404-713-11	TRANSFORMER, IF	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW2	1-216-295-00	METAL CHIP 0 5% 1/10W	(AEP, E)
JW4	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW5	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW6	1-216-295-00	METAL CHIP 0 5% 1/10W	(E)
JW7	1-216-295-00	METAL CHIP 0 5% 1/10W	(AEP, Germany)
		< COIL >	
L1	1-408-793-21	INDUCTOR CHIP 220uH	(AEP, Germany)
L51	1-408-798-00	CHIP INDUCTOR	
		< FILTER >	
LPF51	1-235-221-00	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-804-72	TRANSISTOR 2SC2814-F4	
Q2	8-729-804-72	TRANSISTOR 2SC2814-F4	(Germany)
Q3	8-729-810-16	TRANSISTOR 2SA1678	
Q4	8-729-602-36	TRANSISTOR 2SA1602	(AEP, Germany)
Q5	8-729-810-28	TRANSISTOR 2SC4398	(AEP, Germany)
Q6	8-729-602-36	TRANSISTOR 2SA1602	(AEP, Germany)
Q7	8-729-810-28	TRANSISTOR 2SC4398	(AEP, Germany)
Q21	8-729-602-21	TRANSISTOR 2SC4154	
Q22	8-729-232-69	TRANSISTOR 2SK208GR3	
Q23	8-729-232-59	TRANSISTOR 2SC4666B	
Q24	8-729-232-69	TRANSISTOR 2SK208GR3	(AEP, Germany)
Q25	8-729-232-59	TRANSISTOR 2SC4666B	(AEP, Germany)
Q51	8-729-602-21	TRANSISTOR 2SC4154	
Q52	8-729-602-21	TRANSISTOR 2SC4154	
Q53	8-729-810-28	TRANSISTOR 2SC4398	
		< RESISTOR >	
R1	1-216-037-00	METAL CHIP 330 5% 1/10W	
R2	1-216-037-00	METAL CHIP 330 5% 1/10W	
R3	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R4	1-216-037-00	METAL CHIP 330 5% 1/10W	
R5	1-216-109-00	METAL CHIP 330K 5% 1/10W	(Germany)
R6	1-216-037-00	METAL CHIP 330 5% 1/10W	(Germany)
R7	1-216-025-00	METAL CHIP 100 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R8	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP, Germany)
R9	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R10	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R11	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP, Germany)
R12	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP, Germany)
R13	1-216-089-00	METAL CHIP 47K 5% 1/10W	(AEP, Germany)
R14	1-216-081-00	METAL CHIP 22K 5% 1/10W	(AEP, Germany)
R15	1-216-121-00	METAL CHIP 1M 5% 1/10W	(AEP, Germany)
R16	1-216-089-00	METAL CHIP 47K 5% 1/10W	(AEP, Germany)
R21	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R22	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R23	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R24	1-216-025-00	METAL CHIP 100 5% 1/10W	
R25	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R26	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R27	1-216-073-00	METAL CHIP 10K 5% 1/10W	(AEP, Germany)
R28	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R29	1-216-025-00	METAL CHIP 100 5% 1/10W	
R30	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R31	1-216-043-00	METAL CHIP 560 5% 1/10W	
R32	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R33	1-216-035-00	METAL CHIP 270 5% 1/10W	
R34	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R35	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R36	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R37	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R38	1-216-025-00	METAL CHIP 100 5% 1/10W	
R39	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	(AEP, Germany)
R40	1-216-043-00	METAL CHIP 560 5% 1/10W	(AEP, E)
R41	1-216-049-00	METAL CHIP 1K 5% 1/10W	(AEP, Germany)
R42	1-216-035-00	METAL CHIP 270 5% 1/10W	(AEP, Germany)
R43	1-216-081-00	METAL CHIP 22K 5% 1/10W	(AEP, Germany)
R44	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP, Germany)
R45	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP, Germany)

Ref. No.	Part No.	Description	Remark
R46	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP,Germany)
R47	1-216-025-00	METAL CHIP 100 5% 1/10W	
R51	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R52	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R53	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R54	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R55	1-216-075-00	METAL CHIP 12K 5% 1/10W	(AEP,Germany)
R56	1-216-075-00	METAL CHIP 12K 5% 1/10W	(Germany)
R57	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R58	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R59	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R60	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R61	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R62	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R63	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R64	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R65	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R66	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R67	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R68	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R69	1-216-025-00	METAL CHIP 100 5% 1/10W	
R70	1-216-025-00	METAL CHIP 100 5% 1/10W	
R71	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R72	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R73	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R74	1-216-013-00	METAL CHIP 33 5% 1/10W	
R75	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	(Germany)
R79	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(Germany)
R79	1-216-049-00	METAL CHIP 1K 5% 1/10W	(AEP,E)
		< VARIABLE RESISTOR >	
RV51	1-238-601-11	RES, ADJ, CARBON 22K (MW TUNED LEVEL)	
RV52	1-238-601-11	RES, ADJ, CARBON 22K (FM TUNED LEVEL)	
		< TEST PIN >	
* TP51	1-564-336-00	PIN, CONNECTOR 2P	
		< VIBRATOR >	
X21	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)	
X51	1-577-075-11	OSCILLATOR, CERAMIC (19KHz)	

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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
15	1-575-730-31	WIRE, FLAT TYPE (5 CORE)	
16	1-590-032-31	WIRE, FLAT TYPE (7 CORE)	
17	1-690-588-31	WIRE, FLAT TYPE (9 CORE)	
21	1-690-590-31	WIRE, FLAT TYPE (13 CORE)	
22	1-690-589-31	WIRE, FLAT TYPE (13 CORE)	
⚠36	1-569-007-11	ADAPTER, CONVERSION 2P (E:220-230V)	
69	1-690-732-11	WIRE (FLAT TYPE) (22 CORE)(E:220-230V)	
69	1-690-941-11	WIRE (FLAT TYPE)(AEP,E:120V,Germany)	
⚠105	8-848-144-11	DEVICE, OPTICAL KSS-240A	
106	1-575-001-11	WIRE, FLAT TYPE (12 CORE)(AEP)	
⚠CNJ701	1-540-041-11	OUTLET, AC (NONPOLAR)(2P)(E)	
⚠CNJ901	1-526-794-11	OUTLET, AC (AEP,Germany)	
⚠CNP901	1-575-651-11	CORD, POWER (AEP,Germany)	
⚠CNP901	1-575-653-11	CORD, POWER (E)	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M103	A-4608-362-A	MOTOR (L) ASSY	
⚠PT801	1-450-948-11	TRANSFORMER, POWER (AEP,E:220-230V,Germany)	
⚠PT801	1-450-949-11	TRANSFORMER, POWER (E:120V)	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-501-369-11	ANTENNA (AEP)	
	1-501-374-11	ANTENNA, LOOP (AEP,Germany)	
*	4-948-202-01	CUSHION	
*	4-952-536-01	INDIVIDUAL CARTON (AEP,Germany)	

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The components identified by
mark ⚠ or dotted line with mark.
⚠ are critical for safety.
Replace only with part number
specified.

Ref. No.	Part No.	Description	Remark
		************* HARDWARE LIST *************	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-682-551-09	SCREW +BVTT 3X14 (S)	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#4	7-621-775-10	SCREW +B 2.6X4	
#5	7-624-105-04	STOP RING 2.3, TYPE -E	
#6	7-621-255-15	SCREW +P 2X3	
#7	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S (AEP)	
#8	7-685-234-19	SCREW +KTP 2.6X8 TYPE2NON-SLIT	
#9	7-682-549-04	SCREW (M3X10), S TITE, + BTT	
#10	7-685-870-01	SCREW +BVTT 3X5 (S)	

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